

# Municipal Journal

## And Engineer

VOLUME XXX

NEW YORK, MARCH 8, 1911

No. 10



FIG. 1.—SITES OF FILTER BEDS, FROM THAT OF MAIN SEDIMENTATION TANK

## CHATHAM-MADISON SEWAGE DISPOSAL WORKS

Joint Plant for Two Boroughs—Method of Apportioning Cost—Emscher Sedimentation Tanks—Double Contact Beds—Sand Filter—Sludge Bed—Concrete Construction Throughout—Detail Plans—Cost of Construction and Operation

IN the Spring of 1910 the Boroughs of Chatham and Madison, N. J., which had been considering the subject of sewage disposal and each of which had employed engineers to advise them on the subject, decided to join forces and to consider a sewage disposal plant to be used in common by the two boroughs. Messrs. Hering and Fuller had been acting as engineers for the borough of Madison and Clyde Potts for Chatham. With the agreement to co-operate, these engineers were retained, Messrs. Hering and Fuller as consulting engineers and Mr. Potts as constructing engineer, and the joint plant is now under construction.

This disposal plant is deserving of special consideration chiefly for two reasons—the joint construction and operation under a New Jersey statute of 1910, and because of the inclusion of Emscher tanks in the plans adopted.

The state statute referred to prescribes most of the details of the plan under which such co-operation may be carried on. One of these is that there shall be a prescribed and fixed per-

centage of capacity of the works which shall be considered the property of and be paid for by each of the communities. Under this provision the cost of the works has been apportioned so that Madison shall pay five-sevenths and Chatham two-sevenths of the whole, these being approximately the relative populations of the two boroughs. It is also agreed that all necessary additions and enlargements to the plant, and also to the joint trunk line leading to the same, which may be required from time to time during the first five years, will be constructed and paid for in the same proportion, as shall also the operating expenses. Five years from the first use of the plant, however, and at five-year intervals after that, there is to be a reapportionment of the costs of enlargements, betterments and renewals and also of the maintenance charges, the apportionment each time being based upon the proportionate amount of sewage discharged by the two communities, measurements of the discharges being accurately determined by competent engineers. The engineers had advised that the interest and sinking fund

expenses also be reapportioned each five years, but this, we believe, was not permitted under the state statute. An agreement was made and formally signed by the representatives of the two boroughs embodying these ideas, together with a number of others of a legal and financial nature. This agreement provided that the contract shall continue in force during the life of the plant and its additions and enlargements, this time to be not

less than twenty-five years unless changed or abrogated by mutual consent.

The topography indicated the best site for the disposal works to be in the borough of Chatham, and the plant is now under construction on this site. Provision is made for treating 600,000 gallons per day of dry weather flow, but it is intended that the plant shall be capable of carrying an overload of 25 to 50 per cent during short periods of very wet weather. In general the plant consists of screens, main settling tank, first and second contact filters and sand filter, there being an additional settling tank provided between the two contact filters and between the second contact and the sand filter. There is also provided a sludge bed for receiving the sludge from the several settling tanks. The entire plant is about 900 feet long, the several elements following each other in a continuous straight line in the order named above.

On reaching the screen house the sewage first enters a small rectangular chamber 24 inches by 9 feet, in which are two openings leading to two screen chambers, each opening controlled by a 12-inch sluice gate. In each of these screen chambers are two screens through which the sewage passes in succession, the first having spaces of  $1\frac{1}{4}$  inches between bars, the second with spaces of  $\frac{5}{8}$  inch between bars. These screens are formed of  $\frac{3}{4}$  x 2-inch bars held together by bolts and washers or spacers at top and bottom, each screen being the full width of the screen chamber—4 feet, and 5 feet 3 inches high. Over the screen chamber and extending some distance on either side of it is a "screen house," so-called, which contains a tool room 8 feet 7 inches by 12 feet 6 inches, and a laboratory 11 feet 7 inches by 12 feet 6 inches. This is constructed of brick with a chimney and slate roof. The screen room has a 2-inch yellow-pine floor on the ground level and the other two rooms have granolithic floors.

Immediately adjacent to the screen chambers is a settling tank divided into six sections which receives the sewage from the screen chambers (see Figs. 2, 3 and 4). Each of these six sections is 8 feet 9 inches in the clear and 48 feet long, with a depth from the bottom to the crest of the outlet weir of 10 feet. The bottom slopes 6 inches toward the center in order to facilitate withdrawing the sludge. This settling tank is covered by a series of six elliptical arches resting upon the partition walls, each arch containing three manholes giving access to the settling tank beneath. This settling tank is designed to act as an Emscher tank, and trough-like channels are provided for carrying the sewage flow. These are constructed of cypress boards fastened to a frame work of 2 x 4's, the whole fastened at the sides to the concrete walls by expansion bolts. At angles between the board surfaces 16-ounce copper flashing is used. A 2-inch slot is left at the bottom between the sloping board surfaces.

The sewage enters each of these tank sections through a 10-inch inlet whose invert is about  $2\frac{1}{2}$  feet below the crest of the outflow weir, and flows the full length of the tank to the outlet. The outflow weir is in the form of a 10-inch concrete wall, outside of which is a channel 2 feet wide and 3 feet deep below the crest, through which the effluent is removed. To the front of this weir wall is fastened a scum board of 2-inch plank, held 3 inches from the face of the weir wall by spacers. This construction requires the sewage, in leaving the settling tank, to pass through the 3-inch space between the scum board and weir wall, flowing over the latter and dropping into the channel above referred to. This general construction is shown in the accompanying illustrations.

From this settling tank the sewage passes to the first contact filters. These consist of four beds, each 75 feet square in the clear, the four forming a square about 150 feet on a side. In the center of this, where the four filters come to a common corner, is placed a dosing device for alternating the flow upon the filters in succession. In the bottom of each filter, running diagonally from the common corner to the opposite one, is a main drain, to which are connected the lateral drains, the whole resting upon a concrete floor  $4\frac{1}{2}$  inches thick (see Fig. 6). The main drain consists of a depression in the floor 15 inches

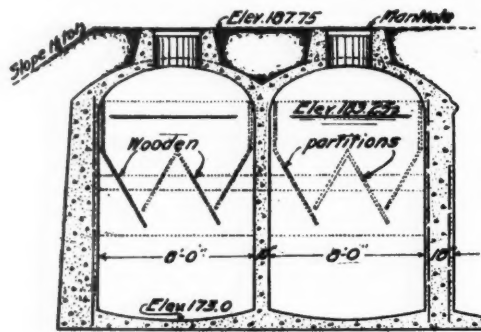


FIG. 2.—MAIN SETTLING TANK. SECTION ON H J.

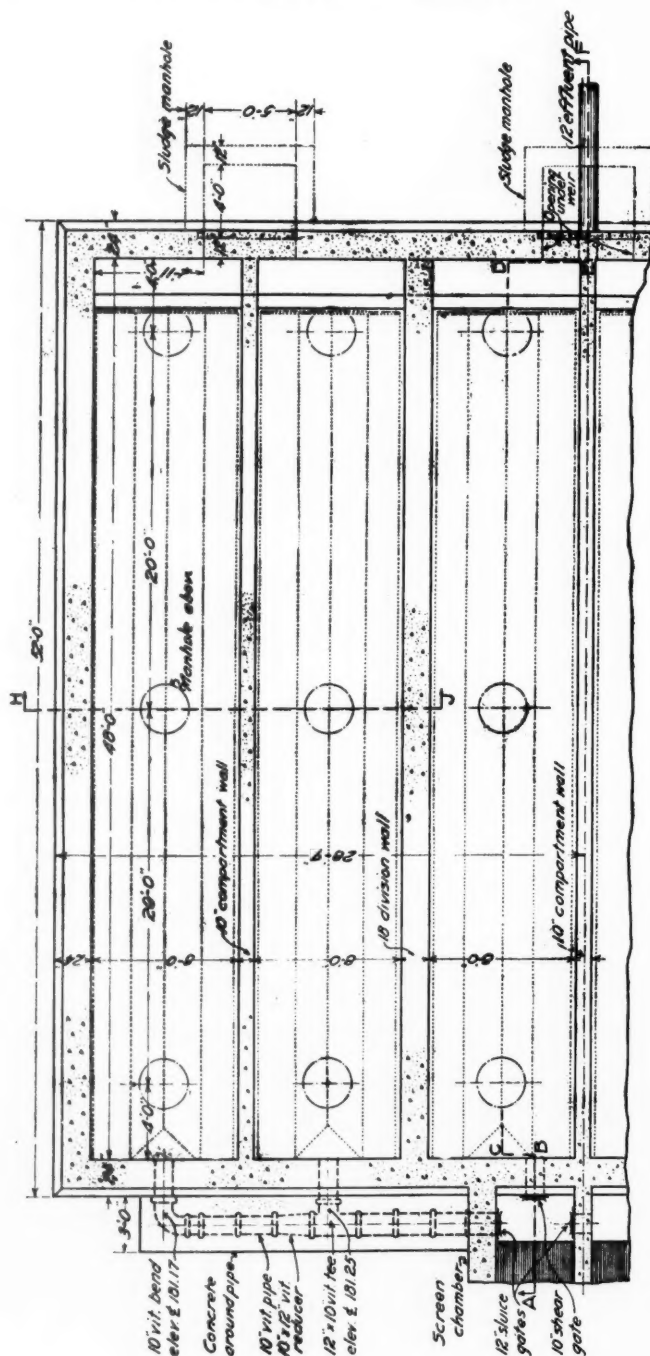


FIG. 3.—GENERAL PLAN OF ONE-HALF OF MAIN SETTLING TANK.

wide and from 4½ to 10½ inches deep (see Fig. 7). This is covered with a slab of 2-inch vitrified clay 24 inches wide. The lateral drains are made of split 6-inch pipe with bells, these pipes being laid with 1-inch openings at the joints, adjacent lines of pipe being practically in contact. Along the edges of the main drain concrete is filled around these pipes and brought flush with the tops of them, in which concrete the slab covers of the main drain are bedded.

In laying the split pipe in the contact filters, these are to be laid so that the joints between the ends of the pipes in any one row shall come opposite the middle of the tiles in the adjoining rows. "The tiles shall be laid as soon as practicable after the 4-inch concrete bottom of the contact filters is set. A finishing course of cement mortar about ½-inch thick shall be spread over the concrete surface, troweled smooth and then, before the mortar coating has set, the tiles shall be placed in their final position bedded slightly in the mortar."

The filters are to be filled with coarse material for a depth of from 3 feet to 3 feet 6 inches over the tops of the lateral drains. This filtering material is to consist of broken stone free from splinters, or of vitrified slag, if satisfactory to the engineer. This is to be screened so as to contain no particles retained by a 2½-inch circular opening and none which will pass through a 1-inch circular opening. The larger pieces are first to be

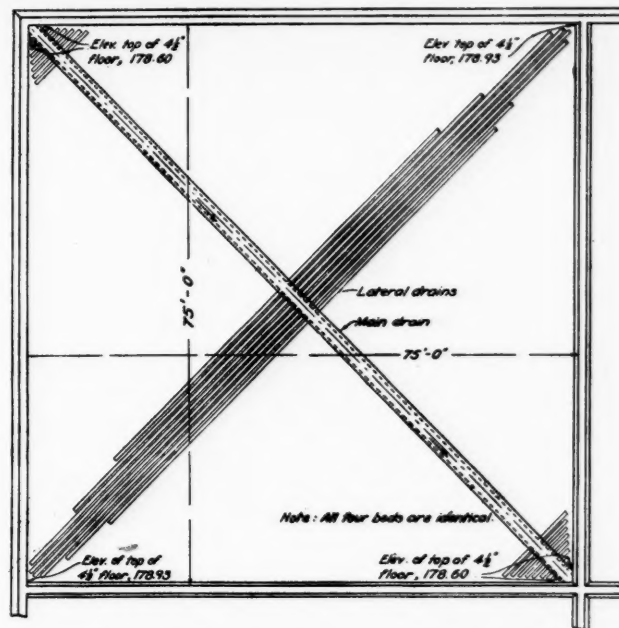


FIG. 6.—PLAN OF CONTACT FILTER, SHOWING DRAINS.

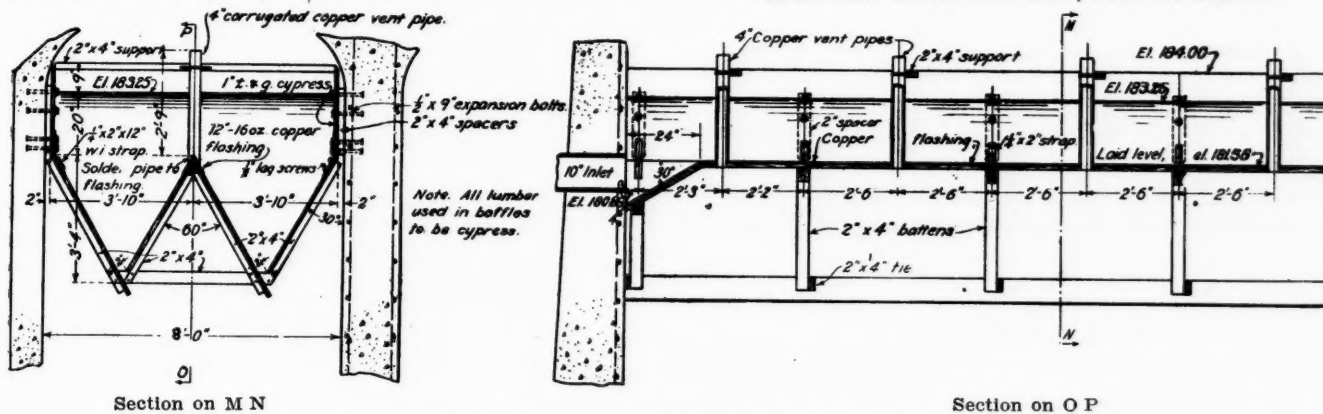


FIG. 4.—CROSS AND LONGITUDINAL SECTIONS OF MAIN SETTLING TANK.

placed around and between the drains so as to entirely cover the top of the pipe, after which the regular material is to be carefully deposited to the required depth. Automatic closing devices are to be installed which will "control the flow of the liquid from the main settling tank into each of the four primary contact filters in turn, filling them to the specified level, which is 4 inches below the top of the filtering material. The devices shall be arranged so that when necessary one or two

primary contact filters may be thrown out of service and the remaining ones continue to receive the sewage in rotation as usual."

From the first contact filter the effluent passes to a settling tank known as the preliminary settling tank, which is a double tank 16 feet wide and 48 feet long (see Figs. 9 and 10). This is provided with wooden partitions forming a trough of the general Emscher form similar to those described for the main



FIG. 5.—WALL OF SECOND CONTACT FILTER, AND PIERS FOR SUPPORTING FIRST CONTACT FILTER



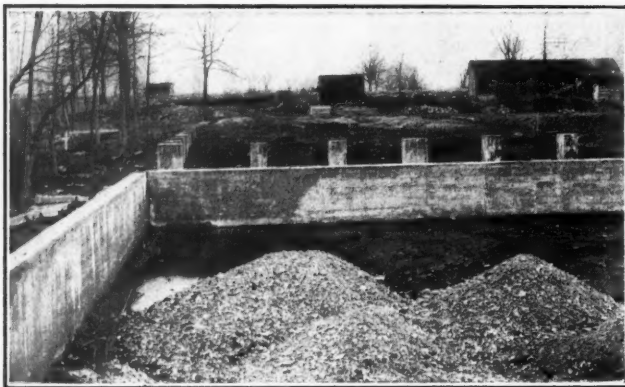


FIG. 8.—SECOND CONTACT FILTER. MAIN SETTLING TANK SITE IN THE FAR BACKGROUND.

settling tank. The bottom of this tank, however, is divided into eight inverted rectangular pyramids forming sumps into which the sludge is expected to collect. Rising vertically from the bottom of each sump is a 4-inch cast-iron pipe provided at the bottom with a bell mouth supported 6 inches above the bottom of the sump. Through this bell mouth the sludge rises, passing into a short branch pipe which leads the sludge to a 6-inch horizontal cast-iron pipe 5 feet above the bottom of the sump, through which 6-inch pipe the sludge is forced by the pressure of the sewage which stands 5 feet above this pipe. This sludge pipe is provided with a valve just outside of the settling tank,

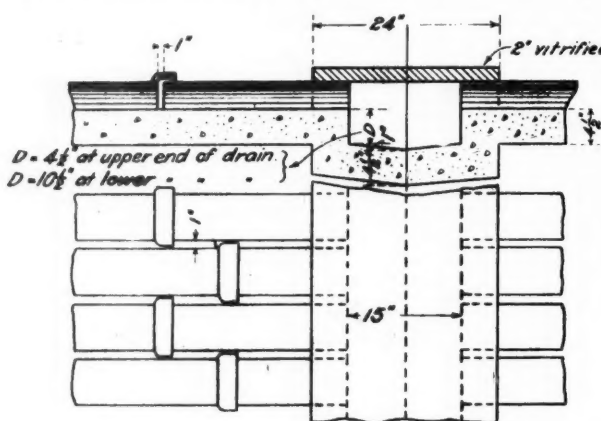


FIG. 7.—SECTION OF MAIN DRAIN, CONTACT FILTER.

and leads to the sludge bed on which the Emscher sludge is to be discharged at intervals.

The effluent from the preliminary settling tank then passes to the second contact filter, which is similar in all respects to the first contact filter. From the second contact filter the effluent passes to a final settling tank, which is similar to the preliminary settling tank just described except that it contains four 8-foot sections instead of two. Both the preliminary and final settling tanks are covered with elliptical arched roofs, and the whole construction is of concrete, except the partitions or troughs which are made of cypress. From the final settling

tank the effluent passes to the sand filters. These are four in number, each 108 feet square. At the bottom of each of these are two 8-inch vitrified pipe main drains, to each of which lead six 4-inch laterals on each side. Sewage is brought to the filter through a 12-inch vitrified pipe laid below the bottom of the filter, from which rise three vertical 12-inch risers which are embedded in concrete and are carried to the level of the sand surface; at which place the concrete enlarges into a flat circular plate 5 feet in diameter, 4 inches thick at the edges and 6 inches where it joins the vertical pier which encloses the pipe riser, this plate being reinforced with 1/2-inch rods. This plate serves to receive the sewage as it flows out onto the bed and thus reduces the amount of wash.

Around each of the tile underdrains there is to be broken stone placed in two layers, extending at least 6 inches from the pipe on the top and sides, the layer nearer the pipe being composed of stones 1 1/4 inches to 3/4 inch in size, and the outer layer of stones less than 1/4 inch. The lowest 8 inches of the filtering material are to be composed of gravel or broken stone, of which the lower 4 inches are to be of 2 1/2-inch to 1-inch size, the next 2 inches of 3/4-inch to 1/4-inch stone, and the remaining 2 inches graded in size from 1/4 inch to 1/16 inch. On this is to be placed a medium coarse sand with an effective size between 0.35 and 0.47 millimeters. This sand will be from 2 feet to 2 feet 3 inches deep. From the sand filters the effluent will pass directly to the river.

The elevations of these several elements are as follows: Sewage in the main settling tank, 183.25; surface of first contact filters, 182.60; sewage in the preliminary settling tank, 177.50; surface of second contact filter, 177.23; sewage in final settling tank, 172.25; surface of sand filter, 171.50.

The sludge bed is 100 feet long by 50 feet wide and is located at the lowest part of the plant, near the Passaic River, so as to receive sludge from all the settling tanks by gravity. The sludge enters it at two points near the two ends of one side. At each point it enters through a 12-inch pipe, the opening of which is controlled by a shear gate. The sewage on leaving this pipe falls upon a concrete slab 3 feet square to prevent wash of the filtering material. In the bottom of the sludge bed is laid a series of 3-inch vitrified drains laid with open joints in lines 6 feet 6 inches apart, all of which connect to a 10-inch main drain laid under the embankment opposite the side at which the sewage enters. These drains are covered with 8 inches of gravel and this again with 4 inches of sand.

In general the capacities of the several elements are as follows: Main settling tank, 150,000 gallons; four primary contact filters, net area of one-half acre; preliminary settling tank, 33,000 gallons capacity; second contact filters, same area as first contact; final settling tank, 75,000 gallons capacity; four sand filters, total area one acre.

The concrete is specified to be mixed one volume of cement to seven volumes of aggregate composed of sand and broken

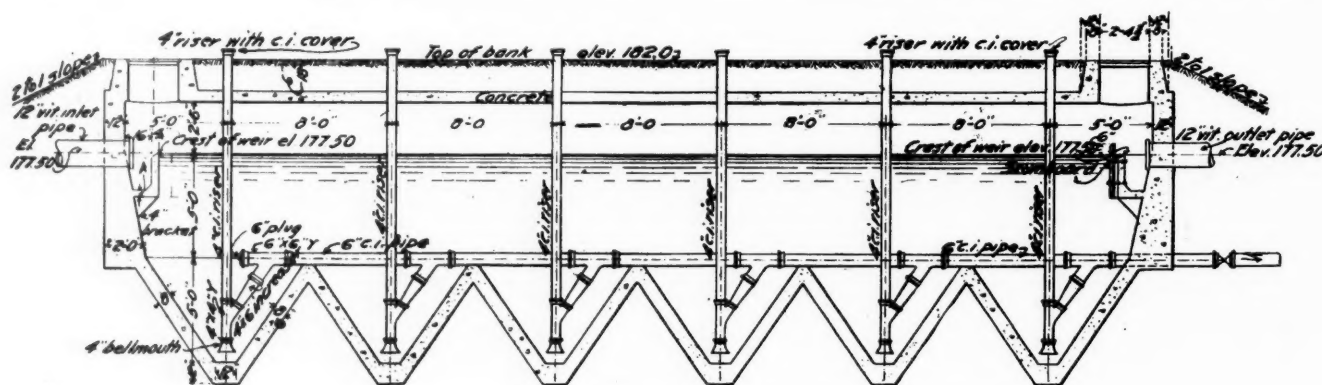


FIG. 9.—LONGITUDINAL SECTION OF PRELIMINARY SETTLING TANK



stone or gravel, the sand and gravel or broken stone being so proportioned that the sand and cement mortar shall more than fill the voids in the broken stone or gravel. Machine mixing is required.

It is provided that the contractors shall secure water-tight work in settling tanks and contact filters and that when these are completed they shall be filled with water and this shall not leak so as to give more than 1-inch fall in 24 hours.

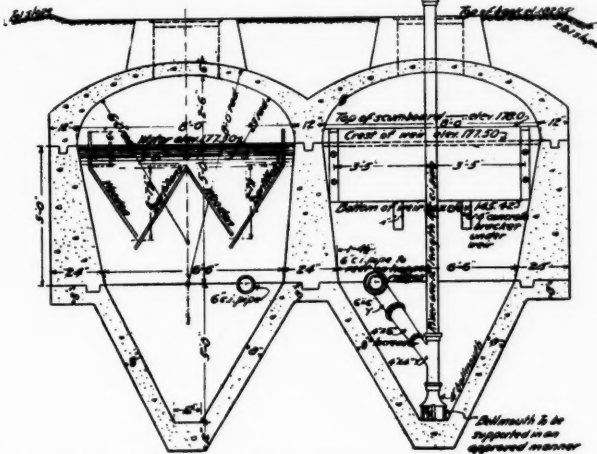


FIG. 10.—CROSS SECTION OF PRELIMINARY SETTLING TANK.

This plant is being constructed by Mr. J. W. Heller, of Newark, N. J., as contractor. The principal unit prices are as follows: Earth excavation, 43 cents; earth embankment, 30 cents; concrete, \$7.40; steel reinforcing rods, 4 cents; lateral collectors, 6 cents a foot; flat tile drain covers, 40 cents a foot; broken stone for contact beds, \$2.35 a cubic yard; sand and gravel for filters, \$1.15 a cubic yard; automatic dosing apparatus (lump sum), \$7,730; wooden partitions and other appurtenances, \$40 per M. B. M. The total cost, on the basis of the estimated quantities, is \$58,696.

The engineers estimate that the annual maintenance cost will be as follows:

Attendant in charge.....	\$900.00
Labor .....	600.00
Repairs, maintenance and incidentals.....	200.00
General supervision .....	300.00
	<hr/>
	\$2,000.00

### CIVIC CO-OPERATION IN PHILADELPHIA

THE circular reprinted below is offered as a double example—of commendable co-operation with a city official by a citizen organization, and of a comptroller who makes a serious and intelligent effort to make his reports intelligible to the average citizens. This circular is being sent out by the Bureau of Municipal Research of Philadelphia, Pa., and is accompanied by a balance sheet condensed to twenty-one lines and five columns; the leaflet measuring 5 x 8 inches, and carrying the reading matter on one side and the table on the other.

#### BUSINESS METHODS IN PUBLIC BUSINESS

##### The City Controller's Report to Citizen-Stockholders

These statements are presented in this report for the first time for the City of Philadelphia with the desire to answer the questions of interested citizens.

The immediate purpose of the summary consolidated balance sheet is to present in a single picture the financial condition as well as all of the funding relations of the city.—Controller's Report to Councils, February 2, 1911, page 14.

#### SOME OF THE QUESTIONS ANSWERED BY THE SUMMARY BALANCE SHEET

##### As to the General (Current) Account

1. How much cash is available for meeting the city's current obligations?
2. What are the city's current obligations that must be met at once?
3. What funds have been appropriated, but not yet set aside under contracts?

4. What funds have been set aside to meet contracts already entered into?
5. What revenues due the city have not yet been collected?

##### As to the Capital Account

1. What is the total debt for which city bonds are outstanding?
2. What is the value of all lands, buildings and other permanent property owned by the city?
3. How much cash from loan funds is still available for permanent improvements?
4. What is the amount of the funds set aside to meet contracts already entered into?
5. What is the amount of these funds appropriated for capital outlays, but not yet set aside under contracts?

##### As to the Sinking Fund

1. What is the amount of cash on hand and investments for meeting the bonded debt as it becomes due?
2. Are sufficient funds being thus set aside to meet future demands?

##### As to the Fire Insurance Fund

1. What is the amount of cash on hand and investments for meeting the city's losses by fire?

Similar balance sheets are presented, giving in greater detail the analysis of the general account, capital account, and the appropriation and loan fund balances. If you are an "interested citizen" and would like to know more concerning the city's financial condition, write to the Controller for his last report to Councils.

## WATER RATE MAKING

### Items Included in Income Which Must Be Raised—Apportioning Rates Among Consumers—"Ready to Serve" Charge—One Rate Plan Impracticable

*Abstract of a paper by F. C. Jordan, Secretary Indianapolis Water Company, before the Illinois Water Supply Association.*

THE rates which a city charges for water should be ample to provide a sufficient fund to take care of the following items:

1. Necessary operating expenses.
2. Proper maintenance of the property.
3. Depreciation charges.
4. Interest charges on the investment in the plant.
5. (In the case of a privately owned plant) A reasonable profit sufficient to encourage capital to incur the risks of this class of enterprise.

The first item embraces the proper operating expenses, including those required to furnish a supply of pure water by filtering it if necessary.

Concerning depreciation, recent court decisions have set forth in very plain terms the necessity for setting aside in a separate fund an amount which will leave intact the value of the physical property. Concerning the last item also the courts have stated in no uncertain terms that inventors in water-works plants are entitled to a fair income on legitimate expenses incurred, but not on those due to gross error or lack of reasonable care. It has been held that a plant shall be appraised as a "going concern," with a proper credit for the reproductive value plus the added value of the business which has been procured at a considerable cost to the investor. Courts and public utility commissions have disagreed on the percentage of this return on the investment, from 7 to 10 per cent on the total value being considered proper by different parties.

With a proper appraisal and with reliable data covering the cost of operation and other expenses, the annual revenue necessary to take care of the plant can be ascertained, after which comes the question of the proper distribution of rates to provide this amount. Unfortunately, scarcely 50 per cent of our companies or departments can tell within a reasonable degree of accuracy what it is costing them per million gallons to furnish water to the consumers. It is also agreed by all that water should be furnished to the citizens without discrimination, but there is room for argument as to what constitutes discrimination. In every city there are certain sections which would not for years pay a revenue sufficient to cover the proper

charges on the investment necessary to furnish them with water and yet which it is desirable to furnish water to, both for fire protection and as a sanitary measure. In the majority of cases consumers in other sections must pay the deficit from such non-profitable sections.

Water mains add to the value of abutting property, and in addition their presence furnishes a "readiness to serve" for which the company or department should receive some remuneration. Both these items should be included in the water rates; the readiness to serve applying both to fire protection and to the readiness to furnish water at a faucet in a residence. The ability to obtain water whenever wanted and in any reasonable amount has a value separate from that of the amount actually used. The readiness to serve in fire protection enables the property owner to reduce his insurance rates, and is thus of direct value to him.

In preparing estimates on which water rates are based, consideration must be given not only to the amount of water to be furnished to each consumer, but also to that which will undoubtedly be lost on account of leaky services, broken lines, etc., which losses cost as much per million gallons as the water actually sold. This loss varies from 15 to 25 gallons per capita per day in New England towns, where it is recognized that the management is most careful and conservative.

The city will always be the largest consumer, and a proper rental for fire hydrants and charge for water used in sprinkling streets, flushing sewers, in public buildings, etc., should be included in the calculation. It has been estimated that the cost of fire protection is approximately 45 per cent of the interest and fixed charges due to construction, and from 18 to 22 per cent of the cost of operation. In most cases it is doubtful whether the city would pay the full amount which these figures would give, and the remainder of it must be added to the rates of private consumers. In general the amount which can be charged against the city should be deducted from the amount which has been ascertained to be necessary for carrying on the business, and the balance will be that which must be obtained from the private rates.

Various methods of rate assessment have been adopted by water companies, among them being the frontage assessment plan, the valuation assessment, and the assessment equal to a certain percentage of the flat rate. In some of the municipal plants it has been found that the assessing of a certain percentage on the valuation of the property has worked very satisfactorily; this assessment, amounting to from ten to fifteen dollars on a property assessed at \$3,000, is called a ready to serve charge and covers a small amount of water sufficient for domestic purposes. Under this plan every citizen of the town becomes a consumer, and the larger property owner pays his proper proportion of the cost of running the plant. It is manifestly unfair for certain properties to share in the benefits of the water supply and yet fail to pay their share of the cost of the operation of the company.

It will be a surprise to the average superintendent to find that as a general proposition the average line does not get on a paying basis until approximately twenty years after its installation; and meantime the balance, as stated above, must be met by the other consumers.

In the matter of meter rates some plants have found to their sorrow that the one-rate plan with no ready to serve charge does not provide sufficient revenue to cover the expenses of the company. The proposal to furnish water to all persons at one rate appears beautiful in theory, but in its workings is disastrous to the finances of the company.

"As has well been stated on a number of occasions, the public has a right to know the details of the operation of a plant, and full publicity of all matters pertaining to the supply of water is absolutely essential; and the writer shares the opinion of the best engineers that the average citizen, if given a clear understanding of the cost of the supply of water, will agree to a rate which is fair and is commensurable with the service furnished by the department."

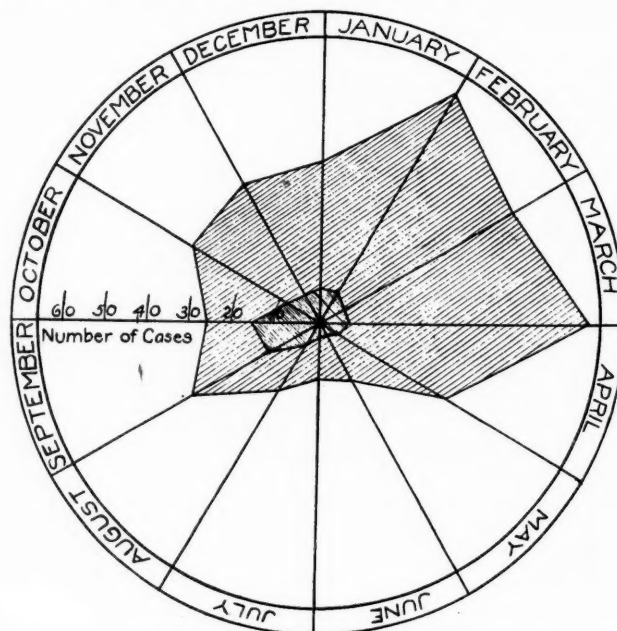
## AMOUNT OF CHLORINE FOR STERILIZING

In discussing the subject of sterilizing water, before the Boston Society of Civil Engineers, Mr. S. DeM. Gage, biologist of the Massachusetts State Board of Health, made the following statement concerning the difficulty of proportioning the amount of hypochlorite to the varying conditions of the water treated:

At present there is no way of telling how much chlorine is needed or whether the amount added is sufficient, except by the results of bacterial analysis, and this bacterial analysis requires 18 to 24 hr. for the body temperature count which I mentioned, and from two to four days for a room temperature count, which is the one usually made. After a disinfection plant has been running for some time, if a complete record has been kept of all the variations in the raw water and the amount of disinfectant required with each, it may be possible to estimate the amount of bleach to use at different times, but there is no chemical test which will indicate with any degree of accuracy how much chlorine is going to be absorbed by the water before the destruction of the bacteria occurs. The oxygen-consumed determination indicates this more closely, perhaps, than any of the other chemical tests. Experiments with many hundred samples of waters and sewages at Lawrence have shown that the amount of bleaching powder required could have been predicted within 10 per cent. in about half the samples. In the rest of the samples the amount required as determined by bacterial tests was anywhere from one-tenth to one hundred times the amount estimated from the oxygen-consumed values. It may be that some satisfactory method will be devised by which the amount of bleach required can be determined in advance. If polluted waters are to be treated by this method without filtration, and the health of communities is to depend upon the satisfactory application of this process, some such test is essential before the element of danger is entirely removed. In the process as tried at Lawrence, disinfection was followed by filtration in both cases, and a large factor of safety was introduced, as even if disinfection failed to remove the bacteria, the filter might be counted on to do its work.

## EFFECT OF FILTERS ON TYPHOID RATES

ACCOMPANYING the annual report of the water works department of the City of Albany, N. Y., is a diagram showing the average monthly typhoid rates for the nine years preceding and for the nine years succeeding the introduction of filtered water into the city. The irregular figure having the coarse shading represents the average number of cases for each month before filtration, while the diagram with the fine shading represents those after filtration. It will be noticed that before filtration typhoid fever was most prevalent during the winter and early spring months, while since filtration it has been most prevalent during and immediately after the summer vacation period. The average number of deaths per year per 100,000 population before filtration was 71.3 per cent and after filtration, 20.9 per cent, a reduction of 70.7 per cent.



TYPHOID DEATHS IN ALBANY, N. Y., BEFORE AND AFTER FILTRATION



# Municipal Journal and Engineer

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## SUBSCRIPTION RATES

United States and possessions, Mexico, Cuba.....\$3.00 per year

All other countries..... 4.00 per year

Entered as second-class matter, January 3, 1906, at the Post Office at New York, N. Y., under the Act of Congress of March 3, 1879.

## CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper, either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL AND ENGINEER, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

MARCH 8, 1911

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## Sewage Precipitation Patents

In this issue there is given a description of one of the first Emscher tanks to be built in this country, construction on this having just about been started. In previous issues we have described plans for using the same general type of tank in other cities, and the publicity which the idea has received and the encomium of prominent authorities render it probable that the use of such tanks will become more or less general.

Most of our readers are familiar with the misunderstandings and legal complications and expenses which have been experienced by many cities which have adopted the septic tank, and it is to be hoped that this history will not be repeated because of Dr. Imhoff's patents on the Emscher tank. This seems improbable, since all the plans so far made have been, we understand, with the consent of Dr. Imhoff. But on page 324 Mr. Shields gives information concerning plans made several years ago which, it seems possible, may furnish such precedents as to invalidate the Imhoff patents. It is to be hoped that all such possibly anticipatory cases may be learned of at once, and

a decision reached at the earliest practicable date, so that the adoption of this method may not be delayed by uncertainty. Possibly the organization which is defending septic tank suits will undertake the straightening out of this matter.

## Promptness in Municipal Reports

THE Mayor of Boston early this year called the attention of the heads of the various municipal departments to an ordinance which provides that every official in charge of a department shall issue his annual report within thirty days after the close of the fiscal year. This, of course, does not mean the publication and distribution of the reports, but we hope that the Mayor will be equally as urgent with the printers and those responsible for the publication of the reports in order that these may reach the citizens promptly.

We have noticed considerable improvement within the last year or two in this matter of promptness in publishing municipal reports. We have already received annual reports for the year 1910 from several cities, possibly the greatest surprise being the receiving of the report of the New York Fire Department for the year ending December 31, 1910. Ordinarily New York City reports are published anywhere from nine to twenty-four months after the close of the fiscal year. This promptness is in line with improvements in the contents also of the reports which are now being published, which indicates a growing appreciation of the importance of these and the part which they may be made to play in securing for municipal departments the confidence and appreciation of the voters.

## Pure Water Saves Lives in Cincinnati

A REMARKABLE illustration of what pure water means to the health of a city is found in a statement just issued by the Cincinnati, Ohio, water-works department covering the first three years of the operation of the new \$11,000,000 water-works system in that city. It is shown that typhoid fever has been reduced to a minimum, giving Cincinnati a death rate from typhoid fever in 1910 of only 5.7 per 100,000 people.

In 1910 there were only 21 deaths in the city from typhoid fever, compared with 239 in 1906, the last year of the operation of the old water-works. The total of deaths for 1908, 1909 and 1910 from typhoid fever is 133, compared with 664 the total of the last three years of the operation of the old system. It would therefore appear that the number of lives saved by pure water was 531.

There has also been a falling off of deaths from other intestinal diseases of from 563 in the years 1904-5-6 to 246 in the last three years, a saving of 317 lives, or a grand total of 848 lives saved.

The report shows that the present cost of pumping water is \$14.36 per million gallons, compared with \$32.05 per million gallons in 1906, so that the money saving has been enormous.

## Water Situation in Erie

IN Erie, Pa., following a typhoid epidemic, copper sulphate has been in use for treating the water since January 28, under the direction of the State Board of Health. A building 24 x 48 is under construction and is being equipped with concrete tanks for mixing hypochlorite, which will be regularly applied to the water as soon as the plant can be completed. In connection with this, the water board will maintain a perfectly equipped laboratory in charge of Mr. Dunwoody, of Troy, N. Y., as chemist, who begins his services this week.

## Water Sedimentation in Poughkeepsie

The report for the year 1910 of the bacteriologist of the Poughkeepsie, N. Y., water works plant, Mr. Thomas A. Cole, gives details of the operation and efficiency of the plant during the year. Chlorine was applied to the raw water during the entire year and coagulant was used when necessary, the number of days per month on which it was used varying from four in October to thirty in March.



The sedimentation basin, which provides storage for about 24 hours average flow, was put in commission on October 2, 1909, and operated up to June 15, 1910 (8½ months), when the water was drawn off and the basin thoroughly cleaned out. After drawing the water off and before cleaning, the amount of sludge which had been deposited in it was carefully measured and analyses were made of the same. The basin was put into operation again on September 24th and continued throughout the year. The sediment removed amounted to 464.4 cubic yards, which was used to grade around the sedimentation basin. The total cost of cleaning was \$149.30.

The total number of gallons of water which had passed through the basins was 845,679,293, making the amount of sludge per 1,000,000 gallons about .55 cubic yard. The specific gravity of this sludge was 1.183. The removal of it effected an average removal of the turbidity of the water of 57.9. Of this sludge the dry material constituted about 29 per cent, or .163 ton per 1,000,000 gallons passing through the basin. An analysis of the sludge showed that it contained 83.3 per cent of vegetable matter.

It was found that 53.3 per cent of the sludge had been deposited in the first sixteenth part of the length of the basin; 70.1 per cent was found in the first third of its length, and 83.9 per cent in the first one-half of its length.

### THE IMHOFF PATENTS

EDITOR MUNICIPAL JOURNAL & ENGINEER,  
New York City.

DEAR SIR:

Sanitary and municipal engineers interested in the question of sewerage purification who have been following the developments of the science and have read the recent description of the Imhoff idea of constructing tanks will be interested in the following statement and the illustrations herewith presented for the general information of the public.

Mr. Imhoff's claims for patents in this country were filed on May 6, 1907, and the claims were allowed June 15, 1909. Claim 1, which covers the patents quite clearly, reads as follows:

"In sewage treatment apparatus the combination of a depositing chamber having a mud outlet at the base thereof, a mud decomposing chamber below the depositing chamber adapted to receive the deposited mud, means for preventing the return of gases and rising particles from the decomposing chamber to the depositing chamber, and means for providing a flow of liquid through the depositing chamber without disturbing a quiescence of the decomposing chamber."

In February, 1907, the writer was called upon to design a system of sewers including a sewage purification plant for a certain town in the State of Indiana. The plans and specifications were completed and submitted in April. A cross-section of the tank as designed is shown in Figure 1. In a description of the plant which was contained in a report made to the authorities bearing date of April 9, 1907, and following a description of the trapped channels running longitudinally through the tank, the following statement is found: "The heavier particles of the sewage, as it passes through the channels, is precipitated and passes down through openings beneath the side walls and is deposited in the pockets on each side. The beam beneath extends far enough to each side to

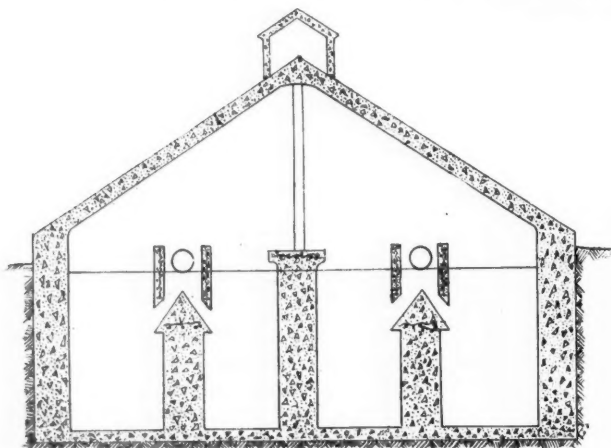


FIG. 1. DESIGNED IN FEBRUARY, 1907.

prevent any sludge from rising up and mingling with the current that passes through the channels." This plant was completed in the fall of 1907 and has been in continuous use to the present time. Similar tanks have been designed and constructed by the writer since this one, which follow along the same principles, one of which is indicated by Figure 2. This would indicate that the novelty of the claims set forth by Mr. Imhoff are not altogether new. The writer desires at this time to call the attention of those interested in the Imhoff patents to the above facts.

Again, in 1899 the then firm of Alvord & Shields was called upon by the city of Highland Park, Ill., to devise a plan for the disposal of the sewage from a small district in the western

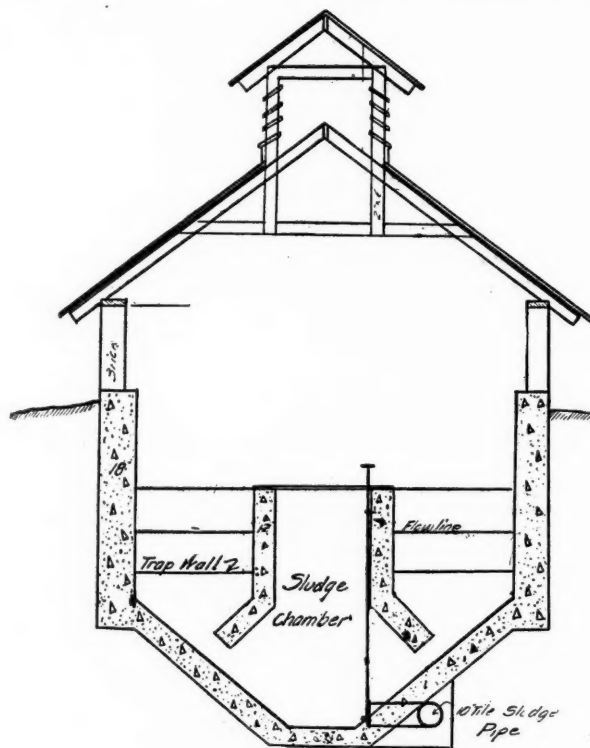


FIGURE 2.

portion of that city which had no natural outlet into which sewage might be discharged. In considering the proposition several schemes were discussed. At that time attention had been called to the different species of bacteria which were developed in the different parts of a septic tank and the possible advantage that might be derived by changing the flow of the sewage through a tank was then considered. Mr. Alvord personally worked out a plan of by-pass channels and gates so that the flow through the tank could be turned in several different directions. The tank was constructed in the year 1900 and has been in continuous operation since that time. It has been the writer's privilege to examine and report upon the working of this plant at several times during the years that have passed. The tank has been operated as intended, namely, that the sewage might enter one compartment and pass through several longitudinal compartments to the outlet until the fresh sludge should accumulate to a considerable extent, then the flow would be reversed and what was first the inlet end would be changed to the outlet end. The plant has done excellent work and has served its purpose to the present time, although it has been cleaned out upon numerous occasions. It is still in use and a change in the flow was made under the observation of the writer within the past few months. This statement is made as it bears upon the later patents issued to Mr. Imhoff, application for which was filed February, 1910, and the patents issued December 20, 1910, Claim 1 of which reads as follows:

"The method of treating sewage in successive depositing chambers consisting in reversing the flow in order to obtain a similar sludge mixture in each depositing chamber."

It is most likely that other engineers have been thinking and working in this same matter and that other plants have been constructed containing these principles claimed by Mr. Imhoff. If so, it will be of interest and value to the profession to know of such cases, for if we have been using this form of construction we ought not to be required to pay royalties on foreign patents.

W. S. SHIELDS.

Chicago, February 24, 1911.

## NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

## ROADS AND PAVEMENTS

## Speed Limit to Be Enforced for Sake of Roads

Chattanooga, Tenn.—Automobiles running at reckless speed, in violation of the government regulations and exceeding, more than double, the speed permitted by law, are tearing away the splendid roads of Chickamauga Park faster than they can be replaced. In many places the crown of the roads has been worn off entirely, and it becomes necessary to fill in with rock to hold the road at all. To secure suitable rock the officials of the park have been at their wits' ends, and the situation, altogether, is a most peculiar, distressing and embarrassing one. The Chickamauga Park officials who reside in Chattanooga are not disposed to exercise arbitrary authority to the discomfort of their fellow citizens, yet the rules governing travel in automobiles through the park restrict the cars to ten miles an hour, and it will not be surprising if some notable examples are made, in the near future, of persons who exceed this limit.

## Six Years' Paving Record

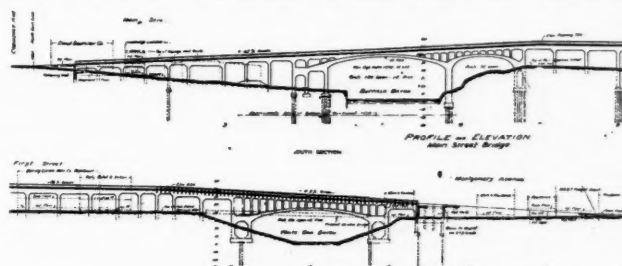
New Orleans, La.—City Engineer Hardee has sent to Mayor Behrman a statement of the amount of paving that has been done in the city since Jan. 1, 1905, the beginning of the Mayor's administration, and the present time, as compared with the amount that had been done up to that date in all previous administrations. The amount during the last six years has been 999,309 square yards and in the previous period of the city's existence it had been 724,368 square yards. The excess in amount in favor of the past six years is 274,941 square yards. The 999,309 square yards does not include any paving done in city streets by railroads or the extensive river front paving done by the Dock Board. The Illinois Central has paved a large number of streets with asphalt in the vicinity of its new terminals at Poydras street, and has still about as much more to do under its contract when it was given the use of certain streets in that locality. That was a very extensive paving contract, amounting to a number of miles of streets when finished. The paving in detail is given as follows: Asphalt—Previous to 1905, 576,475 square yards since 1905, 624,502 square yards; vitrified brick, previous to 1905, 138,300 square yards since 1905, 10,201 square yards; small granite blocks, previous to 1905, 10,168 square yards since 1905, 30,919 square yards; vitrified brick, previous to 1905, 138,000 square yards since 1905, 138,808 square yards mineral rubber, 38,186. The effect of this work on the appearance of the city may be readily seen by inspection, the new paving covering streets in all parts of the city.

## Wheat Straw Used to Build Good Roads

Walla Walla, Wash.—Wheat straw will play an important part in many miles of new good roads which will soon be built in this country. Straw has been used for years on roads in this State. It has been found to give the best results when put on wet and mixed with the soil. When scattered loosely on the road it ignites and the work of weeks is lost. The newer plans are better yet for the application of straw. In the first place, the roads will be ploughed and graded and brought to a crown. When the roadbed has been harrowed and made level the straw it put on to a depth of six inches. A disk cutter is used to cut the straw up and mix it into the earth. If all the straw works into the roadbed more straw is put on until a cushion is formed. A steam roller packs the earth and straw into a hard mat as durable as asphalt and a road which will turn off water if the grade is right. The new method of mixing the straw with the soil costs more than that of throwing straw into the ruts and makes a road that will outlast gravel and cinders. Gravel is expensive and the cost of hauling is heavy. In all the lowlands and uplands in this country straw will be used with the clay soil.

## Viaduct with Some Unusual Features

Houston, Tex.—The accompanying illustration shows the design of the Main street and Montgomery avenue viaduct which will cross the ship channel, the railways and White Oak Bayou and will connect the north and south sides of the city. The total length of the structure will be 1600 feet. The roadway, 45 feet wide, will be paved with brick, and there will be two sidewalks  $7\frac{1}{2}$  feet wide each. The clear-



1600-FOOT VIADUCT FOR HOUSTON

ance will be 22 feet above the rails of the tracks and 58 feet above low tide. The viaduct was designed by F. L. Dormant. In the construction of this viaduct it is contemplated to lay a 12-foot or 15-foot water main under the roadway, also ducts for electric light wires, ducts for telephone wires, gas mains and also a number of hydrants for fire protection of craft in the ship channel and the upper turning basin, and also to wash and clean the brick pavement of the viaduct.

## Improvements at Port Townsend, Wash.

Port Townsend, Wash.—A large amount of concrete work for a town of its size is being done under the direction of William J. Sadler, City Engineer. Last year there was completed about 27,000 sq. ft. of concrete sidewalk, 2,576 lin. ft. of combination curb and gutter, catch basins, etc. In connection with this work there was included a retaining wall containing about 275 cu. yds. of concrete and 3,000 cu. yds. of fill. During the coming year about 48,000 sq. ft. of concrete sidewalks will be laid in the residence section.

## Half Million Spent on Pavements

Huntington, Ind.—Nearly a half million dollars has been expended by Huntington residents in paving streets. This is a fact brought out in a report just completed by City Engineer Wagoner covering the street improvements since 1892. During the seventeen years which have elapsed since the first dirt street was covered with brick, the total of sums expended on different thoroughfares reaches \$439,704.85. This is considered unusually high for a city of 10,000.

## Illinois Good Road Bills

Springfield, Ill.—Senator Frank Landee, Moline, has introduced three bills in the Legislature designed to put roadmaking under State supervision.

Under the Landee scheme a superintendent of roads is provided for each county. He is to be appointed by the Governor on selection of the Boards of Supervisors or Commissioners. His salary is to be paid by the State. No one shall be appointed to the place unless he has had at least three years' experience as a civil engineer, and preference is to be given graduates of recognized colleges of civil engineering.

The County Superintendent is to devote all his time to his work and his salary is to be graded according to the amount of road and bridge taxes levied in the county, his pay averaging from \$800 where the tax is \$10,000 or less to \$2,400 where it is over \$100,000.

The County Superintendent of Roads is to classify the highways in his county in three classes.

First-class roads, which shall include the roads connecting the principal points in the county following the most traveled route.

Second-class roads, which shall include the principal roads leading to the main roads.

Third-class roads, which shall include all by-roads not in the first and second classes.

The first-class roads shall not include more than 25 per cent of the total road mileage of the county.



### New Jersey State Road Work

Trenton, N. J.—State Road Commissioner Frederic Gilkyson's report for 1910 shows that there were 62,621 miles of public roads built in the various counties with State aid, the total cost being \$508,201.36, the State furnishing \$169,400.44 of the lump sum and the various counties the remainder.

Commissioner Gilkyson shows that since the passage of the State Aid Road Act in 1892 the total mileage of roads built in the various counties up to the end of last year was 1,562,204, and the State has expended as its one-third share toward building them \$3,059,882.70.

The Commissioner shows the list of the roads on which \$308,127.29 automobile money was spent in repairs, and he also shows that the various counties spent in addition \$1,086,169.04, making a total repair expenditure of \$1,394,296.42 last year. The list of county appropriations for road repairs singularly shows Hudson County, which has built such a small mileage with State aid, having the very largest appropriation—\$370,000. Essex County is very small, considering her area—\$85,133.54. Bergen County, another county building few roads with State aid, is large—\$126,000—whereas Middlesex County, over which every autoist making a run to the shore from New York and the northern part of the State, only spent \$45,865.01, showing the good condition of her roads and indicating how well they were put down to stand the enormous strain of the autos.

### Town Now Owns Roller and Crusher

Galen, N. Y.—The Town Board has purchased a ten-ton Buffalo road roller. Last year the Board purchased a Climax stone crusher, and with this equipment propose to greatly improve the town's roads the coming season.

### Seven Miles of Highway Under Way at Riverside

Riverside, Cal.—There are probably few cities in Southern California engaged in a more extensive campaign of street improvements than Riverside. Work now under way and for which proceedings have been begun amounts to approximately 90 city blocks, or seven miles of highway, to be constructed of rock roadbed with oiled macadam surface. In all cases cement curb and gutter will be constructed in connection with the roadbed. The cost will be approximately \$135,000.

### South Bend Seeks Track Elevation

South Bend, Ind.—City officials from South Bend appeared before the Cities and Towns Committee of the Senate last week in behalf of a bill introduced by Senator Hibberd to give South Bend a track elevation law similar to the one now in operation in Indianapolis and Fort Wayne. The bill provides that the city shall pay 25 per cent of the cost of all street intersection elevations. Representatives of the railroad companies which would be affected through the operation of the proposed law desire it amended to compel the payment of the same per cent of the total cost of the entire work.

### Superior Grade of Oil on Roads Found Economical

Milwaukee, Wis.—Because a superior grade of oil was used on thoroughfares in public parks last year, no additional street oil may have to be purchased by the Board this year. Oil to the amount of 50,000 gallons was purchased, and 6,000 gallons remaining may be sufficient to meet all requirements this year.

### Wants Paving Rights

Toledo, O.—In order that Toledo may have the fullest possible use for the municipal asphalt manufacturing plant which is to be built with \$9,000 appropriated by Council a year ago, Service Director J. S. Cowell is seeking a change of existing law so as to permit cities to lay their own asphalt street pavements, instead of having them laid by contract. At Cowell's request, Representative Myer Geleerd recently introduced in the Legislature a bill to amend the law in this particular. The engineer's department estimates that the city could save 25 per cent by doing its own work, and it is urged that at the same cost asphalt paving could be put down instead of brick and inferior kinds. Product of the asphalt plant, plans for which already have been drawn by City Engineer Tonson, could be used only for repair work under the present law requiring all original paving to be done under contract.

## SEWERAGE AND SANITATION

### Dairy Averages Published by Health Board

Jacksonville, Fla.—The Board of Health has started to publish the standing of the various dairies that supply milk to the city. The standing is determined by daily inspections and tests of milk and an average is arrived at. This average constitutes a score. The dairies are being scored according to the methods approved by the United States Department of Agriculture.

### New Sanitary Scheme

Ogden, Utah.—Dr. C. E. Coulter, President of the Board of Education, stated that, in accordance with the board's determination to give the "sanitary towel" a tryout in the local schools, orders have been placed with the manufacturers for a trial consignment, which will be installed at once. These towels are of paper, about 12 by 18 inches in size and come in big rolls, which are hung in convenient places about the wash rooms. The individual in using one tears it from the roll by means of the perforations, and after drying himself deposits the towel in a metal box provided for the purpose, and from which it cannot be withdrawn and used over again by some one else.

### Mayors Will Confer on Mosquito Nuisance

South Orange, N. J.—Village President Ira A. Kip, Jr., of South Orange, has sent invitations to the mayors of twenty neighboring municipalities to attend a dinner at the Essex County Country Club on Wednesday evening, March 15, at which the extermination of the mosquito will be brought up for discussion. Dr. John B. Smith, chief entomologist of the State of New Jersey, will give an illustrated talk on "The Mosquito Problem" and will recommend the course of action to be followed in ridding this section of the pest, following the campaign successfully carried out in Panama and Cuba. An address will also be delivered by Dr. L. O. Howard, chief entomologist of the Department of Agriculture at Washington. Among those who will attend will be the executives of Newark, Elizabeth, Montclair, Glen Ridge, Bloomfield, Nutley, Belleville, Orange, West Orange, East Orange, South Orange Township, Irvington, Millburn, Harrison, Arlington, Summit, Springfield, Caldwell and Verona.

### State Health Department to Issue Municipal Sanitary Regulations

Richmond, Va.—The small city or town in search of a sanitary code will have its needs met in large part when the model ordinances now being prepared by the State Health Department are ready for distribution. Covering the whole field of sanitary regulation, from the standpoint of the average Virginia city, these regulations are intended to be a guide to town and city councils and to give them a basis for such legal enactment as has been found effective in other cities. The new regulations, which will probably be issued as a number of the Virginia Health Bulletin, are based upon actual municipal ordinances, many of which have been tested in the courts and found thoroughly valid. They provide for the control of nuisances, the care of refuse material, the regulation of milk and food supplies and like matters of a sanitary character. The State Health Commissioner, on approving the new regulations, recently expressed his opinion that they would meet a long-felt want in the State. He said: "It is not likely that any city will find it expedient to adopt the entire code drafted by the department, but the ordinances cover the whole field and should be of service to all municipalities except those of the largest size."

### Sanitary Conditions in New Orleans

New Orleans, La.—One of the most prominent sessions in some time was held last week by the City Board of Health in the City Hall Annex. It was made known that no cistern-screening inspections would be conducted this year, that the tenements would not be inspected and other work of the Board curtailed. Dr. O'Reilly, in his monthly report, showed that the city was in a very healthy condition, last month being the healthiest January in ten years.



## WATER SUPPLY

### New Pump to be Tested

Perth Amboy, N. J.—Work has now been completed on the Wisconsin cross-compound tank and fly wheel 12,000,000-gallon pump at the city water works at Runyon. The present month will be mostly taken up in making pipe connections with the mains and boilers, after which the pump will be tested. City Engineer Samuel Mason and Thomas Grieve, chairman of the committee on power of the Board of Water Commissioners, will conduct the test. Work on the pump in assembling the different parts has been going on at Runyon for the past six months. About twenty men have been employed continuously in this work and erecting buildings for housing the pump and accompanying boilers. The cost of the pump and appurtenances has been about \$32,000. The total money expended for buildings, boilers, pumps, etc., in connection with this latest addition to the efficiency of the city water supply system has been about \$50,000.

### Extra Water Tax to Contractors

Wheeling, W. Va.—An old ordinance relating to the collecting of the water tax has been revived in the past couple of months and is now being enforced, to the effect that all bricklayers, brick makers, stone masons and plasterer contractors must pay an extra water tax in proportion to the amount of work they do. Blanks have been furnished to the contractors in the business and also to the contractors doing concrete work that must be filled out each month, telling how much work was done by the contractor or company, and this report is collected by the water department and water tax assessed according to the law.

### Litigation with Akron Water Company Ends

Akron, Ohio.—All litigation between the city of Akron and the Akron Water Works Company came to a sudden ending last week at a conference between city attorneys, members of the Akron Chamber of Commerce and representatives of the Akron Water Works Company. An agreement was arrived at whereby the water company will at once commence to install apparatus for the purpose of giving Akron a sufficient water supply and the water is to be pure. The water company will spend several thousand dollars in giving the city immediate relief. All of the water is to be treated chemically, so that obnoxious odors and impurities will be removed.

The agreement means that the water company will continue to do business until the expiration of its contract with the city. In the meantime the city will go ahead with its plans for a municipal plant. The question of buying the present plant, if it can be secured at a satisfactory figure, will be taken up later.

### Many Municipalities Interested in Proposed Reservoir

Albany, N. Y.—Walter McCullough, Consulting Engineer of the State Water Supply Commission, has submitted his report relative to the project of regulating the flow of the upper Hudson River. Investigations along this line have been conducted by Mr. McCullough as the result of requests for the improvement of the river in question from several municipalities and many property owners who are affected. The need of preserving the public health and safety was emphatically dilated upon in the requests for an investigation of existing conditions received by the commission. Mr. McCullough reported that the most practical method of regulating the river was by the construction of storage reservoirs. He recommends the construction of a reservoir on the Sacandaga River, with a dam at Conklingville, which would impound 29,000,000,000 feet of water at an estimated cost of \$4,650,000.

The report was adopted by the Commission, with a resolution declaring that in its opinion the improvement of the upper Hudson is practicable and directing Mr. McCullough to complete the maps, plans, specifications, estimates and lists provided by law, together with such information as may aid the Commission in determining the percentage of the cost of the improvement to be borne by the various counties, cities, towns and villages and by the individual properties benefited collectively.

### Iola Water Tests Started

Iola, Kan.—The set of water testing instruments from Washington has arrived, and Commissioner G. C. Glynn, who is directing the experiments along the line of water purification by the electrolytic process, began arrangements for the first practical test of the new method. A small reservoir, which will be filled with river water, has been constructed, through which the electrical current and salt solution will pass, and after the full treatment has been given the water will be taken from the reservoir and tested by means of an instrument loaned the city of Iola by the United States Geological Survey and which will indicate the full amount of sediment left in the water.

### Pure Water for Grand Forks

Grand Forks, N. D.—The new rapid sand filter which has been in the course of construction since early last fall was formally turned over to the city as completed last week by the Pittsburg Filter Company, and official tests are now in operation. It is expected that the city will accept the plant and the citizens will again have pure drinking water after being without it for more than four months.

### Municipal Water System after Long Fight

Sylvania, Ga.—An interesting lawsuit between the city of Sylvania and the Sylvania Water Company has just terminated here by the city agreeing to purchase the plant and property of the local water company.

About a year ago the city voted \$40,000 of bonds for electric lights, waterworks and sewers, but was enjoined by the United States Court for the Southern District of Georgia on the application of the water company. The court held that, while the city could grant no exclusive franchise to the local water company, yet under the terms of the franchise it had bound itself not to compete with the water company and that installation of a new system would be competitive. A short time thereafter the city authorities, acting under a fire ordinance, forcibly removed a building of the water company outside the fire limits, and at the time considerable feeling was engendered on both sides. The city officials were ruled for contempt in the United States courts for violation of the injunction. The court further ordered the water company to improve its plant and make it adequate for the needs of the city. The company failed to do so and the city brought a petition for receivership against the company. All three of these matters stood for a hearing before Judge Emory Speer at Savannah, but an amicable settlement was reached, and all the matters withdrawn on the purchase of the property and plant by the city. Active work will be begun in a few weeks for the construction of the new improvements.

### Filter Plant in Operation

Moline, Ill.—Four of the six filtering units have been put in operation in Reservoir Park in Rock Island. It will require at least three days for the old water to be drawn from the mains. Here the plant was put in motion without a hitch. Each of the four units now working has a daily capacity of 1,000,000 gallons. The daily consumption in the city is approximately 3,500,000 gallons. Thus the plant, as now operated, is capable of supplying 500,000 gallons in excess of the daily demand. There are in all six units in the plant. Each has a capacity of 1,000,000 gallons. The plant is so constructed that units may be added as the consumption of the city increases. "The Pittsburg Filter Manufacturing Company has given a first-class job," says D. C. Kelly, superintendent of waterworks. "It is now up to the city to efficiently operate the plant. We will need to increase our force, and the future successful results will depend wholly on the efficiency of the men who will be put in charge. Sulphate of aluminum is to be employed in the purification of the water supply. Our next move will be the installation of a laboratory equipment. We have provided quarters for it at Reservoir Park, and it is expected that the equipment will be on hand at an early date. It is planned to engage a professional chemist from one of the universities and to retain him here a month or longer until he can have taught the chief engineer or some other person to be designated how to operate the analytical equipment. We will then be enabled to conduct a bacteriological test of the water every day in the year."

## STREET LIGHTING AND POWER

### Ossining's Lighting System Is Damaged

Ossining, N. Y.—A fire badly damaged the power house of the Northern Westchester Electric Light & Power Company and put the entire electric lighting power system of the city out of commission. It was feared at first that the plant had been wrecked beyond repair and the city streets, residences, factories and the Sing Sing prison would be forced to do without electric illumination for months. A test of the machinery after the flames had been extinguished, however, revealed that the plant could be put in shape within a short time.

### City Council to Investigate Light Complaints

Charleston, S. C.—Much public interest is evidenced in the resolution passed by City Council on the motion of Alderman O'Neill providing for an investigation by City Council of the alleged excessive charges and the poor quality of both the electric and gas light which the Consolidated Company has been furnishing. No time has been yet appointed for the committee on lighting to meet, but it is expected that Chairman Masters will shortly call the committee together and take up the matter, that there may be no delay in presenting all the facts to the municipal body at the next meeting. For some time there has been much complaint and criticism about the character of the light which the Consolidated Company has been furnishing. Many householders make the point that they pay now larger gas bills with a rate of \$1.20 than they did formerly at the rate of \$1.65.

### Municipal Light Plant May Go into Commercial Lighting

Columbus, O.—Electric lighting to be furnished the citizens of Columbus in their homes at a maximum rate of 5 cents a kilowatt hour from the municipal light plant is one of the recommendations which will be made to Council by Mayor George S. Marshall when he submits to them his annual report. The Mayor says:

"There is no doubt but that the local lighting company can make a reasonable profit upon its actual investment at 5 cents per kilowatt hour, and there is no reason why the people of Columbus should longer pay more than 5 cents per kilowatt hour for light. Of course," he is quoted as saying, "if the Columbus Railway & Light Company should see fit on its own account to reduce its rate to 5 cents there would be no reason for the city going into the business of commercial lighting." He states that numerous contracts have already been signed for current for power, and within the near future its sale will make the city plant self-sustaining, saving Columbus approximately \$70,000 a year. But he feels that the city plant has rendered the people an even greater service to the people by forcing the Rail-Light people to reduce its rates about one-half and sometimes more—in one case to 1 cent per kilowatt—to shut out the city from the contract.

### City Grants a Franchise

Corpus Christi, Texas.—A franchise to construct a gas plant has been granted to Michael Maloney. It is estimated that the plant will cost \$100,000 and it is probable that bonds will be issued for the purpose. There is a provision in the franchise whereby the city is to receive one-half of the net revenue.

### Village Without Light

Fenton, Mich.—The village has been in darkness for many nights as the result of a row with the lighting corporation. The underlying reason is that the municipal ownership spirit has come upon the village. The city fathers won't renew a contract with a private lighting corporation on the corporation's terms, whereupon the corporation supplies no electricity for the 50 street lamps. The price the corporation demands is \$60 a year per lamp and the lights to burn for but half an hour after midnight. Detroit, with her municipally owned and operated plant, lights her streets at an average cost, as shown by the city's last annual report, of \$32.17 per lamp for 4308 lamps and the lights burn all night, not the first half of the night only, as here. A committee of three of the village trustees is going to Howell to look over the municipal lighting plant there, which is said to be giving cheap and entirely satisfactory service.

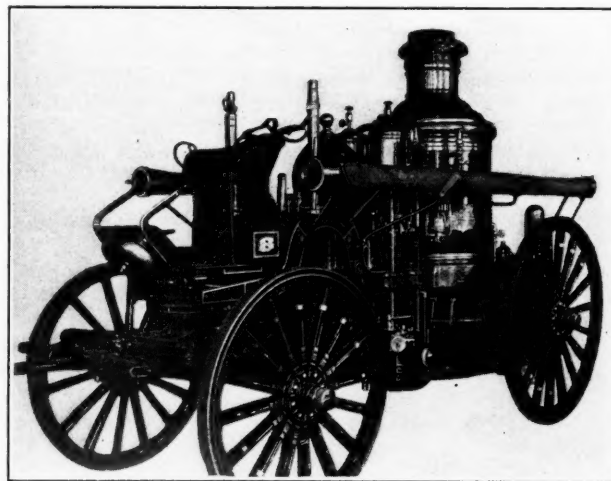
## FIRE AND POLICE

### Will Show Workings of Police Signal System

Toledo, O.—A feature of the police and fire exhibit in the Municipal Exhibition will be a map of the city, showing the police district, the location of call boxes and the like. These will be illuminated by tiny electric lights. The chart will be connected with the real police call system, and the lamps on the map will light as the patrolmen actually report. Citizens thus will be able to trace the movements of the guardians of the peace. They also will be allowed to hold their ears to what is called a "listening monitor," and thus hear what the patrolman says to the man on duty at the headquarters telephone station when he rings in and just how the system is conducted.

### Steam Fire Engine Satisfactorily Tested

Wilmington, Del.—The new Metropolitan fire engine recently built by the American-La France Fire Engine Company, of Elmira, N. Y., for the Weccacoe fire company, of Wilmington, Del., was recently given a test at the foot of West street along the Brandywine Creek. The test was under the supervision of Andrew Jersey, a representative of the constructing company, and C. Whistler, their engineer. Besides these men the members of the local fire



Courtesy Wilmington Star.

NEW METROPOLITAN ENGINE FOR WILMINGTON

company were present, and nothing but admiration was manifested by all who witnessed the working of the modern firefighter. Steam was raised within seven minutes after its arrival at the testing grounds. The first test was with 1,000 feet of hose, the nozzle used being 1 3/8 inches. The next test was with two lines of hose 500 feet in length, and this, too, was made with a nozzle of the same dimensions used at first. Two lines of 250 feet were tried, and this, too, proved satisfactory. Three lines of hose containing 100 feet lengths with an inch nozzle were connected, and the amount of water poured through the sections combined the same, appearing to prove the assertion of the builders that it would pump 8,000 gallons a minute. The last test applied to the engine was of two lengths of hose of 50 foot lengths siamesed into one, and for this test a nozzle 1 1/2 inches in diameter was used. The high winds made all attempts at height throwing an impossibility. The machine cost \$5,250. It was placed in commission immediately after the test.

### Improvements to Fire Department

Sanford, Fla.—The Sanford fire department is now being extended and improved so as to give the city such facilities in this regard as it needs. A steel tower has been erected to be used for giving the alarms and drying the hose. The second floor of the city hall has been divided and sleeping quarters arranged for the men who will have a highly polished brass pole to slide down just as they do in big cities, and soon a locomobile fire engine will be in service. Sanford will then be prepared to do great things in the way of fighting fire.



### Card Index System in Effect

Jersey City, N. J.—The new card index signal system of the Jersey City Fire Department went into effect on March 1 at 8.30 o'clock in the morning. This new system vastly simplifies the methods of the department in locating fires and properly controlling the force at the disposal of the department in case of several fires occurring simultaneously. The unwieldy and uncertain chart system is abolished. Likewise the "return blow" signal is done away with for all time. It had been used by the department since 1871.

### Improvements in Fire Department Planned

New Bedford, Mass.—A drill tower more than eighty feet in height; regular courses of instruction for firemen; a fireman trained in New York's fire college as instructor, and regular monthly or bi-monthly drill for every fireman on the force are some of the interesting innovations that Chief Edward F. Dahill, of the fire department, is planning for this spring.

### Fire Drill Tower for Los Angeles

Los Angeles, Cal.—Work on the new practice tower for the fire department at Avenue Twenty and Pasadena avenue is nearly completed and the first drill probably will be held there in about a week. The tower proper is practically completed and might be used now except for the fact that the ground around the foot of the structure has not yet been paved. An asphalt pavement will be laid around its base in order to permit of the easy movement of apparatus. Towers of this sort are in use in nearly all large cities, according to A. J. Eley, chief of the Los Angeles department, but this is the first one of its kind to be built here. The structure is about 20 feet square, of frame construction and in height corresponds to a six-story building, the top, which is surmounted by an iron railing, being at about the same distance from the ground as the seventh floor of an ordinary office building. On each floor of the tower there are eight window openings, two on each side. Two sides of the structure are equipped with ordinary iron fire escapes. The tower is constructed as much as possible like an office building and it is expected will be of great practical assistance in teaching the art of fire fighting.

### Automobile Fire Apparatus Discussed

Butler, Pa.—An early morning fire in the business section of Lyndora gave the local firemen their first opportunity to employ the new automobile fire truck in actual service, and that the new machine is all that could possibly be expected is evidenced by the fact that water was being played upon the flames five minutes after the alarm sounded in the Central fire station on North street. It is estimated that on stretches of the run a speed of more than sixty miles per hour was attained. The run proves beyond a doubt the excellent worth of the new truck.

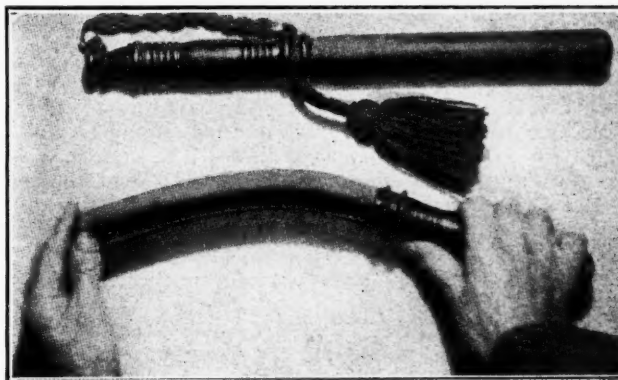
Buffalo, N. Y.—Chief McConnell, of the fire department recently told the members of the Equality Club that, in spite of the rapid advance made by the automobile fire apparatus, the horse would be used for many years to come in drawing fire apparatus. He said the present steam engine has many advantages over the new gasoline engine. "It has been demonstrated," said the chief, "that the gasoline engine weighing 15,000 pounds will not stand up under the rubber tires. Rubber dealers have told me that solid tires will not stand a weight greater than 10,000 pounds. If this is true it will require a lighter engine or a substitute for rubber tires." Chief McConnell further said that the present steam engine threw a greater stream than the gasoline engine; that it could make greater progress through snow and was generally more efficient. He doubted the practicability of the gasoline engine, except as a scout engine to make quick runs in the residence districts and extinguish fires in their incipency.

### No Politics for Aberdeen Police

Aberdeen, Wash.—Chief of Police F. B. Archer has issued an order to the members of the police force declaring that any activity shown in municipal election would be followed by expulsion from the force. This is the first time that any head of a department of the city has ever issued a public order of this kind.

### Humane Police Club Used by Denver Patrolmen

Denver, Col.—Since the adoption by the Denver Police Department over three years ago of what is known as the flexible humane police club, there has been an absolute absence of cut and bruised prisoners. This club is made entirely of the best grade of rubber, handle and striking end all in one piece. Through the center of the club there ex-



POLICE CLUB MADE OF RUBBER

tends a Bessemer steel handle, to which is attached a piano wire coil spring, which is loaded with shot and sand to give the required weight. The ends are vulcanized and the handle enameled a dark maroon color. Whenever officers have had occasion to use this club the prisoner has never shown any bad after effect from the blow. This club is very effective, and is said to be the only humane club in use. J. T. Gannon, while a member of the department, invented the club and the Police Department of this city was the first to use it.

### Police Arrests in New York and London Compared

New York, N. Y.—Mayor Gaynor has sent to the Aldermen the second installment of his annual message. It has to do with police matters and contains many interesting observations and figures. He states that the number of persons arrested in New York City in 1909 was 220,366, as against 112,642 in Metropolitan London. Of these, i. e., in this city, 79,000 were discharged by the Magistrates as unjustified. The number of arrests during 1910 was decreased 50,000.

### Police Chief Recommends Modern Ideas

Richmond, Ind.—The increase of crime in Richmond during the past year has led Chief Gorman of the police department to recommend in his annual report to Council that a number of modern police methods be adopted here among which he suggests the "flash light" patrol system and the purchase of two automobiles. Chief Gorman says the increase in crime is out of proportion to the increase in population. The large number of strangers who have come to Richmond for employment is the cause of the increase, according to Chief Gorman.

### Chemical Auto Engine Giving Satisfaction

Rome, Ga.—Rome's new chemical auto engine is working satisfactorily, and those familiar with the fire engine and insurance situation predict that before many years the auto engines will entirely supplant the horse-drawn vehicles. It has been said that when the new auxiliary water-main is put in, three auto engines could handle the entire town, and thus decrease the expense of maintenance. It is said that motor equipment can be renewed every five years, at a less cost than required to maintain a horse department.

### Police System for Smaller Cities

Huntington, Ind.—Corr's metropolitan police bill providing for a metropolitan police system in cities of the fifth class having a population of not less than 8,000, was passed by the House last week by a vote of 57 to 33. The bill originally included cities of 7,000, but an amendment by Representative Grieger, providing that the bill should apply to cities of not less than 8,000, was approved. The Corr bill grew out of the situation at Bloomington under the present law. Mayor John G. Harris, a Democrat, appointed a Democratic chief of police, but the Republican City Council named Republican police officers.



## GOVERNMENT AND FINANCE

### City Marshall Appointive Instead of Elective

Santa Ana, Cal.—A bill has been passed by the Legislature making the office of City Marshall of towns of the fifth and sixth class appointive by the Board of Trustees instead of elective as heretofore.

### Co-operation in City Departments

Duluth, Minn.—The Board of Public Works has received a communication from the water and light department stating that the water and light board desires to work more closely with the works board and the engineering department in working on improvements. The communication stated that in the future the other city departments will be asked for necessary information before mains are put in. This action is taken so that when water pipes are laid the work will not interfere or damage other pipes which may already be in the street.

### Commission Government Elections

Hillboro, Ill.—The commission form of government has been adopted by 212 majority, all four wards returning a majority for it.

Spring Valley, Ill.—The commission form of government was carried by a majority of 47 in a total vote of 700.

Olney, Ill.—At a special election it was voted, 331 to 177, to surrender the Olney charter and organize under the general law. The Olney charter was granted in 1869 on a proposal to establish a city court.

Sullivan, Ill.—The commission form of government was defeated on Feb. 14th by 52 votes. Only a light vote was cast.

Taylorville, Ill.—The proposition to place Taylorville under the commission form of government was defeated here on Feb. 17th by a majority of 186. Every ward in the city voted against it.

Vallejo.—Despite organized opposition the new charter, with its provision for a commission form of government was carried at the election of Feb. 24th by a vote of 1,279 to 809.

Appleton, Wis.—Appleton adopted, February 7, the commission form of government by a majority of 202.

## STREET CLEANING AND REFUSE DISPOSAL

### Plan to Increase Carrying Capacity of Garbage Wagons

Minneapolis, Minn.—John Brown, in charge of the garbage collection of the city, has a plan for dressing up the city garbage wagons. He proposes to buy canvas covers for the wagons to take the place of the present metal covers. Thus he would make larger loads possible, as he estimates that with the canvas covers each wagon would carry 500 pounds more than now, and end much complaint about poor service.

### Solution of Garbage Disposal Problem

Boston, Mass.—Boston's garbage problem is nearer a definite solution than it has been for years. The Boston Disposal Company's offer to dispose of all the city's garbage, except that in East Boston and West Roxbury, for 54½ cents a ton, or approximately \$235,000 a year, is regarded by the Commissioner as a good indication that at last the city stands in a way to make a satisfactory contract.

Under the plan proposed by the company the city would build five receiving stations in Roxbury, Brighton, Albany street, Dorchester and Fort Hill, at an expense of about \$125,000. All the garbage of these districts would be carried to the stations by the city teams as at present, and in Roxbury and Brighton the garbage would be hauled to the waterfront by the company. This plan would mean the doing away with all dumps now used by the city, concerning the majority of which repeated complaints have been made. Mr. Rourke is convinced that the dumps should be given up at once to meet modern sanitary requirements, and says that it would be only a few years when all the dumps, at the present rate of filling, would be no longer available.

### Municipal Housecleaning Becoming General

Little Rock, Ark.—Little Rock, under the direction of her City Beautiful League, is planning to have a thorough cleaning of the city by districts. District leaders for each district have been appointed. The district leader will have associated with him in the work two men, the three making an advisory committee to look after the entire district. The city has been divided into eleven districts. The City Beautiful Association plans to remove unsightly objects, see that streets are cleaned, vacant lots cleared of brush, grass and flowers set out and trees planted. Its object is to plan not only for the present but for the future with the end in view of making Little Rock one of the most beautiful cities in the South.

Muncie, Ind.—The Muncie Commercial Club is preparing to start on its campaign for a "Muncie Beautiful," and at the regular meeting of the Club last week President Marple announced the members of the special committee which will have charge of this work. This committee is now drawing its plans for the beginning of the campaign to "clean up" Muncie and at the regular meeting of the Club the chairman of the committee will announce the plans that are ready for the indorsement of the Club. The subject has been discussed to some extent, and from the expressions heard there is a growing sentiment among the business men of the city for a more beautiful city and a better city.

### Street Flusher Proves Its Use

Lansing, Mich.—The new street flusher proved a very useful part of the city's equipment when Superintendent of Public Works Wilson cleaned the pavements in the business district with it last week. An attempt was made the fore part of the week to clean the streets by sweeping, but this only made matters worse; the flusher removed all dirt to the gutters where in its wet condition it was drawn away without being blown about.

### Cost of Street Cleaning Is Reduced

Louisville, Ky.—The obvious improvement which has been noted in the condition of the streets of the city, and which had resulted in many compliments being expressed by citizens and organizations in letters to the Street Cleaning Department and the Board of Public Works, is analyzed in a report which has been made to the board by R. G. Heffernan, clerk of the department. The report covers the calendar years of 1909 and 1910, the latter being under the administration of Mayor Head, while 1909, with the exception of the final month, was under the previous regime. The report is interesting in that it shows that marked progress has been made in systematizing the work of the Street Cleaning Department. The report shows that during 1909 149,854 loads of ashes, garbage and dirt from the streets were disposed of by the Street Cleaning Department, as compared with 179,550 loads during 1910, under the present administration. The work was done in 1909 at a cost of \$153,675.66, compared with \$172,334.62 last year, making the cost per load under the former administration \$1.026, as against \$.960 under Mayor Head. Thus more work has been done during the past year, 26,696 more being hauled than in 1909, and at a smaller cost per load, the saving on each load handled amounting to over 6½ cents, which is a big item when applied to the work of such an important branch of the city's service as the Street Cleaning Department. The most marked improvement which has been shown has been a street cleaning proper, as distinguished from the handling of the garbage of the city. Under the former administration the records grouped the work on granite, brick and asphalt streets together, the number of loads of dirt removed from them during 1909 being 32,085. Under Mayor Head more than this amount of refuse was taken from the granite and brick streets alone, 41,020 loads being handled, while in addition 18,803 loads were taken from the asphalt streets. A point which has been emphasized in connection with the operation of the Street Cleaning Department is that not only are the streets in the downtown section being kept clean but the suburban districts are also being attended to, and crews of men are kept constantly busy in the outskirts.

## RAPID TRANSIT

### Test No-Seat No-Fare

Trenton, N. J.—The Trenton Street Railway Company has defeated the attempt of the city of Trenton to make a test case in the local police courts of the no-seat no-fare trolley ordinance by taking an appeal to the Public Utilities Commission to determine whether the ordinance is a proper regulation of street car traffic. The company claims that the power of the Utilities Commission to pass upon local regulations for trolley lines extends to an ordinance such as the one in question.

### City's Transit Contract Legal

Philadelphia, Pa.—The contract between the city and the Rapid Transit Company has been declared legal by the Supreme Court, which yesterday affirmed the decision of Judge Kinsey in sustaining the demurrer and dismissing the suit of Elmer E. Brodie, a taxpayer. Justice Brown handed down the decision of the Court, from which Justice Mestrezat dissented. The Brodie suit was a companion action with the previous proceedings to test the right of the company to charge straight five-cent fares, following the withdrawal of the six-for-a-quarter tickets. His objections were that the whole scheme of the agreement with the city violated the constitutional provision with respect to a municipality becoming a stockholder in a private enterprise.

### Would Run Street Railway

Toledo, O.—Council last week heard read the proposition of Charles A. Thatcher for the organization of a local company of \$1,000,000 capitalization to take over and operate the street railway system. The communication was referred to the committee on public affairs without discussion.

### Further Municipal Railroad Planned for Los Angeles

Los Angeles, Cal.—There is a possibility that the city may be asked to build another municipal railroad, according to Charles Silent, park commissioner, who is nursing the project of a line for the purpose of opening up Griffith Park and making it more accessible to the public. Commissioner Silent has been taking the matter up with the officials of the Los Angeles Railway corporation and reports that much interest is being shown in the proposition. He suggested to the board that in case the corporation does not come through with a request for a franchise, the city still could build the line and lease it to the company. "I think the idea of a municipally owned railway to Griffith Park is worthy of consideration and should be taken seriously," he declared. There was some doubt as to whether the deed to the park would permit the city to either build a railway in the park or grant a franchise through it. This question now is being looked into by the city attorney's office.

## MISCELLANEOUS

### New Street Signs to Guide Night Wayfarers

Syracuse, N. Y.—New street corner signs which can be seen at night as well as in daylight, are being placed on the new ornamental street light posts in the business center of the city. The signs are made of opal glass set in a metal frame back of a stencil on which is the name of the street. During the day the light-colored glass shows through the letters on the stencil. At night the electric lights back of the glass shine through it, showing the street name plainly. The signs are ornamental and add to the appearance of the electric light posts.

### Plans Ordinance to Protect Linemen

Chico, Cal.—An ordinance intended to protect the lives of linemen in the employ of the various power companies doing business in Chico has been presented to the trustees by City Attorney Guy R. Kennedy. It requires the power companies to paint the cross arms of poles carrying high voltage wires a bright yellow, that the linemen may recognize at a glance the deadly wires. The ordinance also requires that the wires be strung at least 26 inches apart and a 4-foot space be allowed at any point where they cross other wires.

### Old Street Names to Be Seen

Boston, Mass.—As fast as the present street signs need replacing signs will be placed on all Boston streets which will contain the original names in small letters below the present title. This request has repeatedly been made by the Daughters of the Revolution, and the consent of the street department has been secured. Temple place was once known as "Turn Again alley," and lower Boylston street as "Frog lane." Near the post office the sign on a Devonshire street building reads "Black Jack alley." In the market district will be found "Corn court" where Merchant row now is, and "Fish lane," which was an extension of Corn court.

### Compulsory Playgrounds

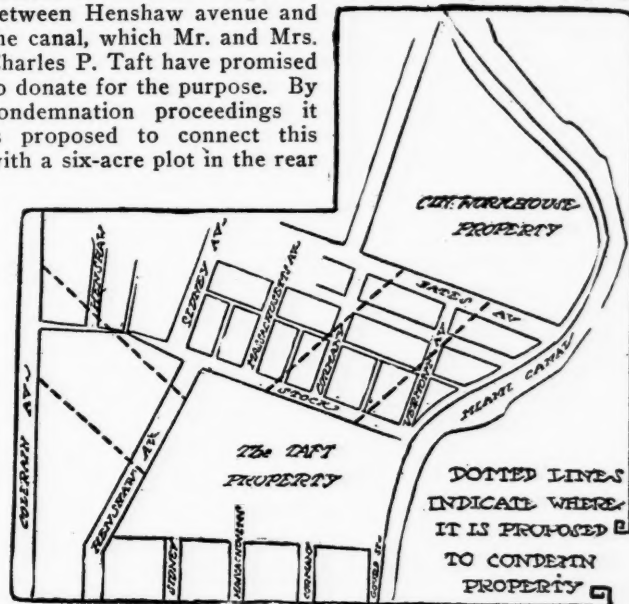
Olympia, Wash.—A bill has been introduced in the Legislature providing for the inclusion of small parks and playgrounds in all future land subdivisions within or adjoining the limits of cities of the first, second and third classes. According to the best available information this is the first attempt based on sound economics arbitrarily to combine parks and playgrounds with street plans in private real estate development.

### More Public Playgrounds for Portland

Portland, Ore.—Portland is to be made famous for its children's playgrounds, according to the plans of the City Park Board. Last week it was decided to invite the Playground Association of America to send an expert here to outline a scheme for future developments. The expert will arrive in March and will deliver several addresses on playground activities in other cities. The sum of \$150 was appropriated as a fee for the expert. Contracts were awarded for furnishing playground apparatus for Kenilworth, Brooklyn and Columbia parks to Spaulding & Bros. Work on these playgrounds has already been started, and they will be ready before the Summer vacations. The playgrounds in Peninsula and Sellwood parks, installed last year, are being improved and much additional apparatus will be installed.

### Land Donated for Playground

Cincinnati, O.—The largest playground in Cincinnati is being planned by the Camp Washington Business Men's Club for that section of the city. If plans mature the tract devoted to the park will contain nearly sixteen acres. The nucleus of the tract is a plot of more than eight acres, lying between Henshaw avenue and the canal, which Mr. and Mrs. Charles P. Taft have promised to donate for the purpose. By condemnation proceedings it is proposed to connect this with a six-acre plot in the rear



of the workhouse, now owned by the city and occupied by the boys in the neighborhood for baseball diamonds and football gridirons.

Savannah, Ga.—Prof. R. B. Lawrence has presented to the Legislature a suggestion that there should be legislation looking to the extermination of pet animals. It is his opinion that pet animals spread all kinds of disease, and he suggests that all stray animals be exterminated and that a tax of \$100 be placed on the owners of dogs.



#### Ordinance Regulates Moving of Buildings

Iola, Kan.—An ordinance has been passed prohibiting the moving of buildings, traction engines or other high or heavy structures or machines without a permit having first been obtained. A fine is imposed for non-compliance.

#### Shade Trees for Long Beach

Long Beach, Cal.—Tentative plans for the beautifying of this city by a general and systematic planting of trees on every street and avenue, so that they will have attained at least shade-giving height by the time visitors come this way either to or from the Panama Exposition, have already been adopted.

#### Poughkeepsie's Municipal Dinner

Poughkeepsie, N. Y.—A dinner of the municipal officers of the city of Poughkeepsie was held at the Nelson House, February 14. The menu was a handsome booklet containing eight views of attractive features of the city. A brief message from the Mayor, John K. Sague, printed on one of the pages, begins with the quotation, "Where there is no vision the people perish." The general purpose of the message and of the dinner was to cultivate that esprit de corps so necessary to the successful building of a city. The speakers were: Rev. Archy Decatur Ball, John Calhoun Otis, Alderman Thomas F. Mullen and Dr. Herbert E. Mills.

#### Extensive Improvements for Rochester

Rochester, N. Y.—Rochester is looking forward to a plan of improvements that will ultimately make it one of the finest cities in the world. At the recent dinner of its Chamber of Commerce plans which have been considered for some time were laid before those present and afterward printed in the newspapers. They represent the careful work of a landscape architect, a building architect and a traction expert, all of them of national fame, and comprise a most elaborate scheme for a new city hall as the main feature of a new civic center on Main Street West, as well as such other improvements as a union station for all the steam roads reaching the city, the widening of streets and provision for parks. The street improvement program is a very extensive one and provides for main thoroughfares to be constructed or widened traversing the city from north to south and from east to west. These are to be supplemented by what are termed local streets, the entire number of minor changes suggested being about seventy-five. The park plans contemplate the establishment of small parks of about twenty acres each whenever they are desirable and land can be acquired for the purpose. This great scheme has not been formulated with the idea that it will be carried out at once or that it will be completed for many years. The report simply outlines the artistic possibilities of Rochester.

#### Anti-Smoke League Discusses Plans

Cincinnati, Ohio.—The annual meeting of the Smoke Abatement League was held last week in the Union Trust Building and, following the election of the Board of Trustees for the ensuing year, short talks on the best means to rid the city of the smoke nuisance were heard. There were 25 members of the league present. In opening the meeting the president said that much improvement had been noted in the condition of the city since the Smoke League had been formed, but that there is still much work to do, and that the railroads are not doing their share in abolishing as far as possible the smoke nuisance, despite the fact that they continually promise to do so.

#### Condemns City Hall

Marion, O.—Carl Wilcke, state building inspector, has condemned Marion's city building, declaring it the most dangerous municipal edifice in Ohio.

#### Accident Insurance on City Elevators

Oakland, Cal.—Accident insurance of \$5,000 upon the elevator in the annex to the City Hall in the Braley-Grote Building at 1358 Broadway was recommended by the Board of Public Works at a recent meeting. The matter was brought before the Board by City Attorney B. F. Woolner and the action was taken that the city might be prevented from defending itself in any suits for damages as a result of accidents to passengers in the City Hall elevator.

#### Licenses for Washers of Clothing

Jacksonville, Fla.—Licenses for washerwomen is the latest plan of Mayor William S. Jordan, who has announced that he would urge upon the City Council the necessity of passing an ordinance requiring persons who take in washing to register with the City Recorder. The Mayor believes such an ordinance is necessary as a sanitary measure, so that clothes may not be taken into homes where contagious diseases exist. The proposed ordinance also contemplates the idea of protecting the public against the loss of clothing. The practice of requiring washerwomen to procure licenses is already in force at Pensacola.

#### Gift of a Drinking Fountain for Horses and Dogs

Barre, Vt.—The National Humane Alliance of New York, of which Senator Lewis M. Seaver of Williamstown is secretary and treasurer, has presented the city of Barre with a drinking fountain for horses and dogs which has been accepted by the City Council and will be set up in the city square the coming summer. The contract for cutting this fountain has been let to Marr & Gordon of this city.

#### Trees Will Be Sold for a Penny Each

Knoxville, Tenn.—In conjunction with the City Beautiful League, which is striving to make the city of Knoxville a place of great beauty, the Miller Store Company, through J. H. Anderson, president, has a plan on foot to distribute 1,000 catalpa trees on March 15, to the Junior League of the City Beautiful. This league is composed largely of children of the city schools. The plan is to furnish every child in the city schools a catalpa tree, bearing a card of instructions. The cost will be only one cent. This card, which gives instructions as to the care of the tree from the time it is set out until maturity, was issued by the United States Bureau of Forestry. As may be readily seen, the one cent is only a small portion of the cost of the tree and will about pay for the printing of the instruction card. It was originally intended to give the trees away absolutely free, but it was decided to place the nominal price of one cent on them so that they will be looked upon with value by the children.

#### Curfew Ordinance Declared Unconstitutional

Altoona, Pa.—The curfew is a thing of the past in this city. After a precarious existence of fourteen years, during which the ordinance providing for a curfew has sometimes been enforced and sometimes not, it has been declared unconstitutional by City Solicitor Thomas C. Hare, and at an early date it will be wiped off the statute books.

#### Saves Money for City

Trenton, N. J.—Chairman Charles H. Reichert, of the Street Committee of Common Council, has made it possible for the city to save the hire of at least ten men by compelling the drivers of rented teams to assist in loading their wagons. Heretofore it has been the custom for drivers to sit still while the city's laborers did the shoveling. From eight to ten outside teams are employed and Mr. Reichert figured that to have the drivers do their share of the work would result in saving the hire of just so many men. The city pays \$6 per day for a team of two horses, and the Councilmen on the Street Committee agreed with Mr. Reichert that the assistance of the driver was not too much to demand, since the drivers invariably work for individuals who from time to time employ the same teams.

#### Will Protect Trees

Columbus, O.—With his expenses to be borne jointly by the City and the Park Commission, Supt. James Underwood of Franklin Park may be given the position of tree warden with all of the trees in Columbus under his supervision. The proposition was favored in a meeting of the Franklin Park Commissioners in a meeting they held with Mayor Marshall. Faulty trimming done by owners of trees who failed to appreciate the value of their possessions to the building up of the city beautiful, and alleged careless slashing of limbs by companies wiring the city are some of the malpractices which it would be his office to prevent. His duties would not conflict with that of a landscape architect for whose appointment Mayor Marshall recommends in his annual budget.



## LEGAL NEWS

### A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

#### Railroads—Construction of Ordinance

*Behrman, Mayor, vs. Louisiana Ry. & Nav. Co.*—A city desiring the construction of a belt line railroad, to be ultimately owned and controlled by it, contracted for the construction of five miles of the road by the F. Railroad Company, and, pending litigation with reference to the city's right to use a portion of the projected right of way in control of the dock commissioners, passed an ordinance granting to defendant the right to use the road when constructed in consideration of defendant's payment of \$50,000 to be used in further construction, or, in case the F. Company failed "without legal excuse" to construct the portion of the road specified in the prior ordinance, defendant might construct the same and succeed to the F. Company's rights under such ordinance in lieu of the payment required, or in lieu of a pro tanto reduction thereof according to the amount of railroad constructed by defendant in place of the F. Company. Held, that the words "without legal excuse," referring to the F. Company's default in constructing the road, were not inserted solely for defendant's benefit, so that defendant might waive the same and assert his right to construct the F. Company's portion which it failed to build, because the opposition of the dock board precluded construction over a part of the projected right of way.—Supreme Court of Louisiana, 54 S. R., 26.

#### Injury to Pedestrian—Negligence

*Forster vs. Kansas City.*—Notwithstanding the opening statement in an instruction that it was the duty of defendant to keep its streets in reasonable repair, whereas the duty is to make a reasonable effort to keep them reasonably safe, yet the instruction, having afterward stated that such duty consisted in an "exercise of reasonable diligence—that is, such care as an ordinary prudent person would exercise"—was not erroneous. While a person walking along a city sidewalk should not be heedless of defects, he is not required to consider that he is treading a dangerous and hazardous way.—Kansas City Court of Appeals, Missouri, 133 S. W. R., 663.

#### Public Improvement—Notice

*Rubin et al. vs. City of Salem et al.*—Under City Charter of Salem, requiring the recorder to give a notice "specifying with convenient certainty the street proposed to be improved and the kind of improvement which is proposed to be made," a notice of improvement of a certain street "by grading the same with proper crown and gutters to a point 8 inches below the established grade thereof, and by then macadamizing the same with crushed rock 8 inches deep, the same to be properly spread and rolled," was not insufficient, for not stating that the contractor should remove the crosswalks, and that the curbing should consist of certain sized lumber nailed to posts at certain distances.—Supreme Court of Oregon, 112 P. R., 713.

#### Ordinances—Validity

*Cain vs. Mayor and Common Council of City of Bayonne.*—Assuming that some of the provisions of an ordinance regularly enacted by a Common Council are susceptible of an application that would be in excess of the authority granted by the city charter or an unreasonable interference with its provisions, the ordinance will not, on that account and in advance of any such application, be set aside in toto, if in other respects it is unobjectionable.—Supreme Court of New Jersey, 78 A. R., 663.

#### Suspension Pending Hearing of Charges

*Cull et al. vs. Whittle et al.*—Where the Constitution gave to the Government no express power to suspend civil officers which the Governor was authorized to remove on conviction on charges preferred against them, the power to spend pending hearing of charges will not be implied from the power to remove. Court of Appeals of Maryland, 78 A. R., 820.

#### Defective Streets—Sufficiency of Notice

*Carter vs. City of St. Joseph.*—Under Revised Statutes, 1899, requiring one injured from a defect in a sidewalk, etc., to give written notice to the city, stating the time and place, etc., of the injury, no recovery could be had where the notice of injury stated that it occurred on January 29, 1909, when it in fact occurred on December 29, 1908 the fact that the city knew of the defect in the sidewalk before the injury, and that it had been repaired and was in good condition at the time specified in the notice, not obviating the effect of the erroneous statement in the notice. Kansas City Court of Appeals, Missouri, 133 S. W. R., 851.

#### Assessments—Corner Lots

*City of Covington vs. Schlosser.*—Kentucky Statute prohibits any fourth-class city from charging the owner of property abutting on improved streets with more than one-half the value of such ground, after the improvements are made, including the value of buildings and other improvements on the improved property. A section permits the city to assess the entire cost of constructing sewers, including the intersections, to an amount not exceeding \$1 per front foot for the abutting property upon the lots abutting upon the streets, etc., in which the sewers have been constructed; the cost of the construction of sewers not exceeding the sum of \$1 a front foot of the abutting property, to be apportioned equally on the abutting lot owners according to frontage. Another section, which is a part of the charter of fourth-class cities, provides that "public ways," as used in this act, shall mean all public streets, alleys, sidewalks, lanes, roads, avenues, highways and thoroughfares. Held, that, when a corner lot is assessed for the cost of improving one street upon which it abuts, the cost of such improvements should not be considered in estimating the assessment against the lot for improving the other street on which it abuts, but the cost of improving each street independent of the other cannot exceed one-half the value of the ground after the improvement is made, though when the lot is improved on one street the amount assessed against it for improving the other street should be estimated on its value after both streets have been improved. Court of Appeals of Kentucky, 133 S. W. R., 987.

#### Ordinance Prohibiting Cigarette Smoking—Reasonableness

*Hershberg vs. City of Barbourville.*—Though Kentucky Statutes gave City Councils power to enact police and sanitary regulations not conflicting with the general laws, an ordinance prohibiting the smoking of cigarettes within the corporate limits, though an attempted exercise of the police power, is void as an unreasonable invasion of personal liberty. Court of Appeals of Kentucky, 133 S. W. R., 985.

#### Accident to Engineer—Negligence

*Essen et ux. vs. City of Philadelphia.*—An employee in the engineering department of the city of Philadelphia, while standing on the elevated track of a railroad sketching a semaphore, saw a train approaching, and instead of going upon a platform, which was beside the track, stepped from the track alongside a picket fence between the two tracks, and was struck and killed by the train. There was a platform on each side of the tracks, beside one of which the semaphore stood. It did not appear that the sketch could not have been made from either platform. Held, that there was no evidence to charge the city with negligence which would render it liable for his death. United States Circuit Court of Appeals, 183 F. R., 414.

#### Police Power—Licensing Hotels

*City of Chicago vs. M. & M. Hotel Co.*—Under section 62 of the city and village act, providing for the incorporation of cities and villages, and delegating to them police powers over a large number of subjects, but not conferring power to regulate and license the occupation of hotel keeping, no such power exists, the general language of clause 66, giving power "to regulate the police of the city or village and to pass and enforce all necessary police ordinances," which clause must be construed in connection with the other clauses, meaning that the power may only be exercised in reference to such subjects and occupations as are enumerated in other specific sections. Supreme Court of Illinois, 93 N. E. R., 753.

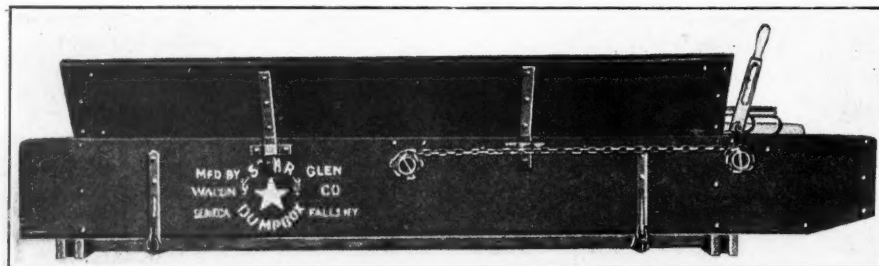
## MUNICIPAL APPLIANCES

### Substantial Wagon Dump Box

THE Glen Wagon Company, Seneca Falls, N. Y., claims to make the strongest and most practical dump box offered to the contracting trade.

The Star dump box, as it is called, is built of 1½-inch hard white maple sides, 2-inch maple doors. Corners of box are angle ironed. Bolsters fastened to box with heavy angles. Two center doors hung on steel pipe, which steel pipe is bolted to heavy angle iron truss running lengthwise of inside of box; cannot possibly sag or get out of alignment. Load can be controlled to either equipment or with combination spreading and dumping device. The box has a spring seat and wide foot board. It is painted red, striped in black and well varnished. Made to fit any running gear. Weight, 500 pounds. Capacities, 1½ and 2 cubic yards.

The Glen company also makes a 3½ cubic yard dumping wagon for use in trains drawn by a traction engine.



HEAVILY BUILT CONTRACTORS' WAGON DUMP BOX

### Large Capacity Continuous Mixer

ONE of the new concrete mixers is the Eureka, No. 90, made by the Eureka Machine Company, Lansing, Mich. The machine was exhibited for the first time at the New York Cement Show last December, where it attracted the favorable attention particularly of paving contractors. While the capacity is large, rated at 25 cubic yards per hour, presumably on gravel or finely broken stone, the weight and dimensions are not such as to prevent its use in positions where small work is usually done or to interfere seriously with its portability. The No. 90 mixer weighs 4,700 pounds complete when equipped with a 6-horsepower gasoline engine. It may also be equipped with motor or steam engine.

The general design is pleasing. It is well balanced and symmetrical. As indicating the strength of the construction, the manufacturers state that over 800 pounds of crucible steel is used in every machine. The feeders and all parts subject to much wear are made of this material. The makers embody in it the same exclusive features of proportioning and mixing used in their other sizes. The length of the No. 90 is 14½ feet; width, 4 feet 7 inches; height to bins, 4 feet 4 inches; length of mixing trough, 7½ feet. The trough is made of 3-16-inch tank steel.

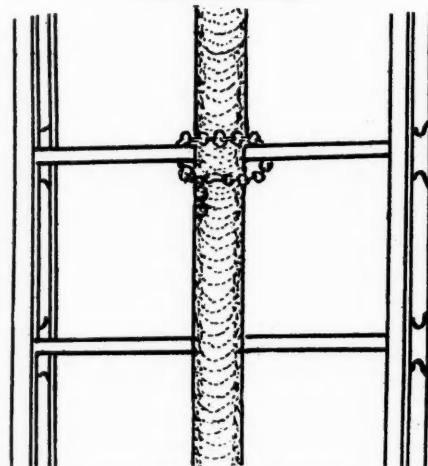
The Eureka is claimed to be the original continuous mixer. The first model appeared in the early nineties. All through the years which have followed the manufacturers have been constantly in touch with the actual field conditions. The new large capacity No. 90 embodies the result of this experience.

### Device for Converting Ladder Into Water Tower

A SIMPLE device for holding a hose to a ladder so that the ladder with the line of hose becomes an improvised water tower has been invented by Chief Arthur H. Hope, Asbury Park, N. J.

It consists of a chain fastened around the hose at certain intervals along the ladder which sustains its weight. At present the ladder pipe is used in a great many places where aerial trucks are in service, but the invention of Chief Hope tends to make the pipe more serviceable by holding it secure to the rungs, thus allowing a straight stream with minimum friction to be thrown from the end of the nozzle secured to the upper rung. In order to use the upper part of a ladder on an aerial truck for running hose to feed a ladder pipe, the ladder strap at present used has a large hand grip and when the ladder is being extended this hand grip often catches between the rungs and stops the elevation. By using the

any time. With the use of the turntable the stream may be delivered at any point. In making these chains it will take about 30 inches of chain with a harness snap at one end. The chain link must be large enough to place the snap in any link to fit the hose. In making fast, take the center of chain, place it across the front of hose and over the top of rung on each side, then bring it out under the rung to the front of hose and make fast with the snap to a link in the chain.

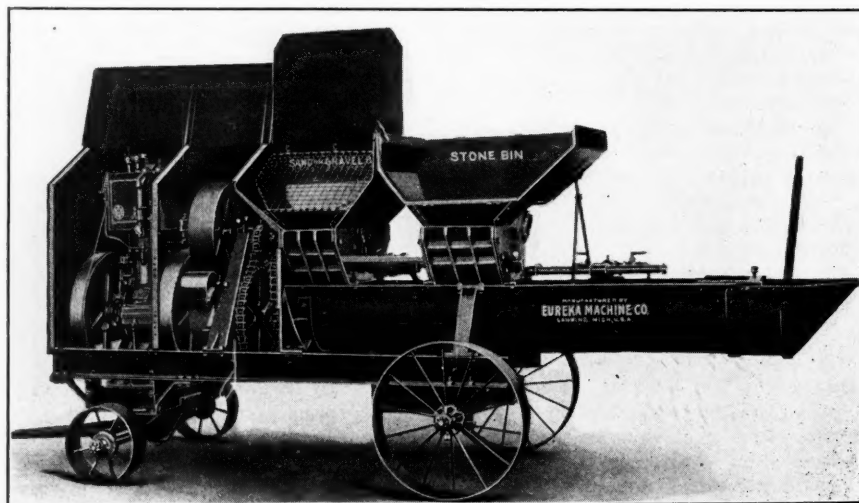


HOSE CHAINED TO LADDER

### Roughen Street Gauge

THE Roughen adjustable street gauge, manufactured by P. Roughen, Fond du Lac, Wis., is simple in construction, being built of two planks, steel center mast and steel two-wheel trucks. The planks are attached in the center to the steel mast and on the end to steel extensions at the wheel trucks. By means of these extensions any width of the street can be obtained. On each side of the planks are trestle rods that keep the gauge from swaying and extending from these top of the mast to the planks are two adjusting rods that are provided with locknuts to set and hold the gauge to the desired crown. Each end of the gauge is provided with a small hand wheel by which the gauge may be raised or lowered between the trucks. The whole gauge is built strong throughout, but nevertheless is light and is easily moved. The gauge can be adjusted to any crown of any width of street.

The gauge is used for grading the streets after the curb and gutter are built



CONTINUOUS CONCRETE MIXER—25-YARD CAPACITY

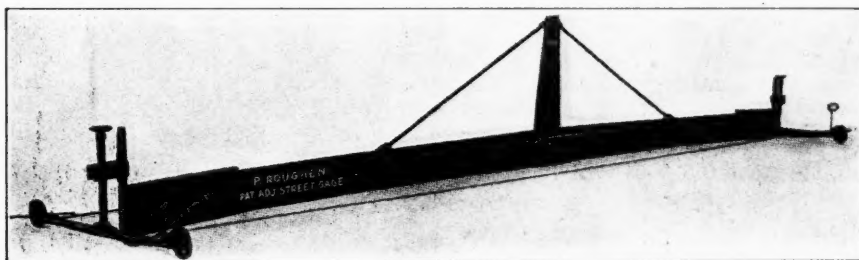


by placing the machine in position by resting the wheel trucks on the gutter and lowering the planks by means of the hand wheels at each end. The gauge is then moved along the street and the excavation is made to the proper depth. No grading stakes are necessary and when the grading is completed the street has the proper grade and crown. This gauge can be used equally as well on single curb as on combined curb and gutters.

By raising the planks, the gauge can be used the same way that it is used for grading to show the depth of the

#### Portable Pumping Outfit

A PORTABLE pumping outfit for special construction work, either steam or electric driven, is made by the Kingsford Foundry and Machine Works, Oswego, N. Y. The platform is sufficiently large to carry a tool box. The illustration shows the steam-driven outfit. The electric apparatus is equipped with a Westinghouse induction motor. The centrifugal pumping is of the side suction type with discharge 3 inches in diameter and suction openings 4 inches in diameter. The openings are provided with flanged couplings to re-



GAUGE FOR FORMING CONTOUR OF STREET PAVEMENT

concrete and to get an even surface on it.

By raising the planks a little higher, the gauge is used to strike off the top-dressing of cement pavements; the cement is poured in front of the gauge and it is pulled along by a man at each end and the whole street is struck off at the same time. No center boards are then necessary and no sags or hollows are left.

Iron hangers can be dropped over the planks of the gauge and boards laid upon these to form a bridge across the street for men to walk upon while troweling and finishing the surface. By the use of this bridge the finishing work can be done much faster and no board marks are left upon the finished street.

The gauge can be used to strike off the sand cushion for brick pavements to get an even, smooth surface. Experience has taught that there is an unnecessary loss in brick paving caused by the breaking of bricks by the roller. If the sand cushion is trampled upon too much in striking it off, it becomes packed in places and after the bricks are laid and the roller is run over them it will break the bricks which are laid upon the packed places. By the use of this gauge it is not necessary for men to walk upon the sand cushion and this loss by broken bricks is avoided.

Considerable time can be saved by the use of several gauges.

ceive suction hose or linen house couplings. The reel will carry 400 feet of 3-inch inside diameter linen hose. Twenty-five feet of rubber suction hose accompanies the outfit. Each pump has a capacity of 260 g.p.m. against 35-foot head. Weight of single outfit 2800 pounds. The long length of hose carried allows a contractor in city work to carry his discharge outlet to a catch basin at a considerable distance from his work, thus avoiding the annoyance and perhaps incidental damage of having a large volume of water running along the street. The outfit is, of course, useful for a number of special purposes.

#### Gas Calorimeter

THE Doherty Gas Calorimeter, manufactured by the Improved Equipment Company, 60 Wall street, New York, is a device for determining the heating value of artificial gas. It is simple in construction and operation, and claimed to be so durable as to maintain its accuracy indefinitely. The unit in which the heating capacity of the gas under examination is determined is the British thermal unit, commonly abbreviated b. t. u., or the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit, under standard conditions of temperature and pressure.

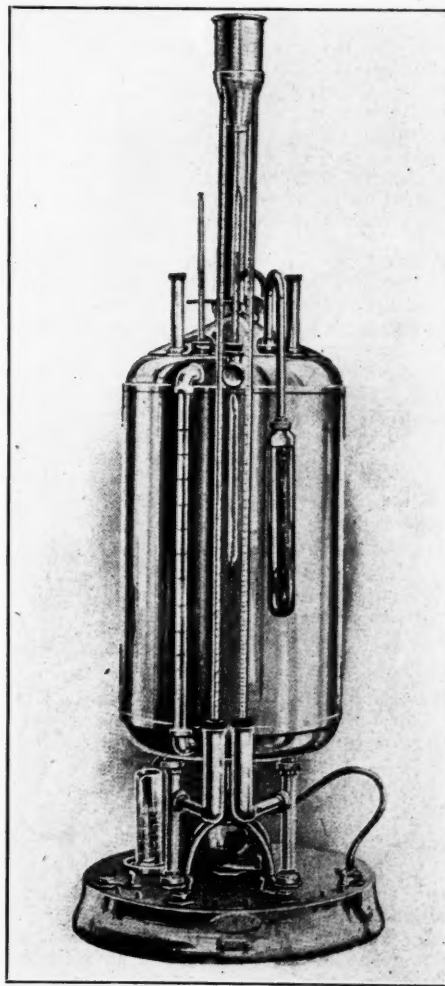
The fundamental principle of the

Doherty calorimeter and the feature distinguishing it from all others is the gas under test by the water which that gas heats, thus maintaining absolutely constant the ratio of volumes. The pressure is imparted to the gas by the displacing water; and this water secures its constant pressure from a constant static "head" in the regulator of the calorimeter.

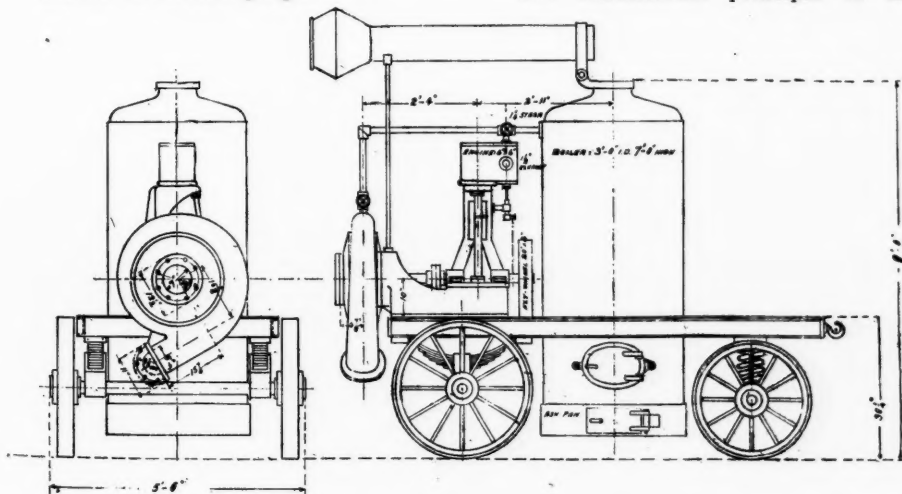
Every cubic inch of water passing the flame is heated by the burning of a cubic inch of gas displaced by it. This being the case, determination of the heating value in b. t. u.'s becomes simply a question of measuring temperatures with suitable corrections for existing conditions bearing upon the problem.

The calorimeter has two essential parts—the absorption chamber and the tank. Both of these are cylinders of annular section, the former being placed within the latter. A heavy insulating layer of non-conducting felt guards against interchange of heat through the walls. The Bunsen flame burns within the absorption chamber. The entire arrangement is thus compact and self-contained and of extreme simplicity. The regulator is simply a standpipe in which a constant head or pressure is maintained by means of a supply of flowing water, part of which escapes to the drain, the remainder keeping the standpipe full as displacement takes place in the tank.

Full instructions for operation are furnished with each calorimeter. The instrument is highly finished throughout in heavy nickel plate. The net weight is 45 pounds.



DOHERTY CALORIMETER



CONTRACTORS PORTABLE STEAM PUMPING OUTFIT

## NEWS OF THE SOCIETIES

**Society of Chemical Industry.**—At a meeting at the Chemists' Club, 108 W. 55th street, New York, February 24, two papers were read and discussed relating to the treatment and purification of boiler feed water. Thomas R. Duggan, London, England, presented a paper on "A New Treatment of Water, Preventing Scale in Boilers Without the Use of Chemicals by the Aid of Aluminum Plates." The invention of Herr Brandes of a process employing a device known as the aluminator, which led to the softening of old scale and the formation of less new scale, was referred to. With this process the boiler feed water runs down an aluminum plate having a certain slope and various widths and depths of corrugations in its surface according to the character of the water to be treated. The theory of the operation of the aluminator is that a current of electricity is induced by the passage of the water over this metallic plate and ionization of the salts present in the water takes place.

The second paper, entitled "Boiler Water Purification," was presented by William M. Booth, who arbitrarily classified waters according to the quantity of dissolved solids present into soft, hard, saline, alkaline and acid waters. Several methods of purifying boiler waters, ranging from mechanical filtration to the use of boiler compounds and various combinations of thermo-physical, thermo-chemical and the electro-chemical methods were discussed.

**Illinois Water Supply Association.**—The third annual meeting was held, February 21-22, at the University of Illinois, Champaign, Ill. David Kinley, dean of the graduate school, gave an address on "Possible Lines of Service of the University to Municipalities." He advocated the collection of data regarding cities and municipal public works. Laws for the regulation of public utility corporations, he said, would not be unwelcome to them provided the laws were fair and reasonable.

F. C. Jordan, president Indianapolis Water Company, pointed out the great importance of rate making, upon which depends the success of a water system. The rates must be sufficient to provide the operating expenses, maintenance, improvements, interest on fixed charges and depreciation, and, in the case of a private company, a sufficient return on the investment to attract capital. The speaker was opposed to the meter system, and expressed the belief that if the authorities are properly informed a satisfactory rate can be agreed on.

T. C. Phillips, Chicago, presented a paper on water waste surveys in Chicago. It was contended that such surveys or tests are more effective than meters in checking waste.

C. H. Burdick, Chicago, presented a paper on "The Relation of Intakes to the Purity of Water from the Great Lakes." The paper showed the necessity of long intakes to avoid troubles due to turbidity, pollution and the blocking of intakes by ice and sand or clay. The relative cost of long intakes and short intakes, supplemented by filter plants, was discussed.

W. B. Bull, Chicago, described a new and simple electro-mechanical method of purifying water. Caustic soda produced in an electrolytic cell is fed to the pump suction main, and at a little distance beyond an iron chloride solution is introduced. The evaporation is very effective and the process is cheap,

costing only about 45 cents per million gallons.

Prof. E. O. Jordan read a paper on "Bacteriology of the Swimming Pool," and described some experiments made in Germany as to the bacterial contents of the water in such pools, and the effect of the hypochlorite treatment in reducing the bacteria to a minimum.

W. F. Monfort, St. Louis, presented a paper on "Experiments on Water Treatment with Ozone." Prof. E. Barbour presented an abstract of a paper by himself and H. P. Corson on the "Analysis of Chemical Used in Water Treatment." E. MacDonald Lincoln presented a paper on "The Condemnation of Land to Protect Wells," in which he cited court decisions. F. C. Amsbury presented some notes on deep well pumps. Papers on various features of the sewage-disposal problem were presented by Dr. A. Lederer, Frank Bachman, Chicago, and Langton Pearse.

Officers for 1911 were elected as follows: Owen T. Smith, Freeport, president; R. R. Parkin, Elgin; C. H. Cobb, Kankakee, and E. M. Ely, Danville, vice-presidents; Edward Barton, Director of the State Water Supply Survey, Urbana, secretary.

**League of Second and Third-Class Cities of New York.**—The second annual conference of the Mayors and other city officials of the second and third-class cities of New York State will be held at Poughkeepsie, N. Y., on May 25 and 26, the date having been definitely decided at a recent meeting of the advisory committee. It is planned this year to make the gathering an even larger one than was held in Schenectady a year ago when municipal health was the topic for discussion. The committee is now engaged in securing experts on the various subjects that will be discussed, and there is every indication that the addresses will be of exceptional importance to municipal officials.

The committee has decided to consider the following subjects at the Poughkeepsie conference: "The Essential Framework of Municipal Government," including the usual plan of separating the legislative and executive functions and also the more recent form of municipal administration known as government by commission, "Taxation and Assessment," "The Administration of Public Works Departments in Reference to the Various Methods of Cleaning and Care of Streets."

The question of permanent organization will be discussed at this conference and the advisory committee, to which was referred this question at the first conference, will recommend that no constitution be adopted but that merely such officers be selected as will be necessary to prepare the organization for each meeting and to carry on the conference when in session.

The object of the Mayors' conference is to meet annually to discuss the latest phases of improvements in municipal government and recommendations with the idea that the Mayors and other city officials who attend this conference may receive suggestions which will be of benefit to them in the future.

**Engineers' Society of Western New York.**—The society has elected these officers: President, George C. Diehl; vice-presidents, Leslie J. Bennett and Frank N. Speyer; directors, John G. Ullman, George T. Roberts, S. M. Kieland; treasurer, Thomas J. Rogers;

secretary, Helge S. Anderson; librarian, William A. Haven.

**International Association of Municipal Electricians.**—Active preparations are going forward for the next convention of the association which is to be held in St. Paul, Minn., in September. The place and time of the meeting are wise selections, and, as fire matters in the Twin Cities are, in keeping with the spirit of those communities, held up to the top notch of efficiency, the visiting electricians will find much of interest. The meetings of the municipal electricians result indirectly in greater security from fire to the people of the country at large on account of the advanced knowledge obtained by the members of the latest ideas and appliances. The dates of the meeting have not yet been fixed, but the announcement will soon be made by the executive committee. Clarence R. George, city electrician, Houston, Tex., is secretary of the association.

**American Highway League.**—The third annual convention was held at the American Hotel, St. Louis, Mo., February 23-25. Members of the association were interested in the private restricted residence districts known in St. Louis as "places," which have no counterpart in any other city, it is said. Another feature of St. Louis which attracted attention was the asphaltic slab pavement invented by Street Commissioner Travilla. Mrs. Frank Degarmo addressed the convention after the reading of technical papers, speaking of good roads as tending to promote the educational welfare of country children. She spoke of demonstrations given in Louisiana where models of good roads are shown with a schoolhouse at one end and the home at the other.

**Central Educational Association of Minnesota.**—State Highway Engineer George W. Cooley addressed the recent convention on good roads, stating that good roads would do as much as any other one thing to make rural life more desirable, to keep the young people on the farm, and that a course in road-making should be taught in the agricultural schools of the state.

## Calendar of Meetings

- March 6-11.  
Canadian Cement and Concrete Association.—Annual Convention, Toronto, Ont.—Wm. Snaith, Secretary, 57 Adelaide street East, Toronto, Ont.
- March 8-10.  
Engineering Society of Wisconsin.—Annual Meeting, Madison, Wis.—W. G. Kirchoffer, Secretary, Vrooman Building, Madison, Wis.
- March 21-22.  
New York State Railroad Association.—Quarterly Meeting, Syracuse, N. Y.—C. Gordon Real, Secretary, Kingston, N. Y.
- May.  
City Commission Congress.—Meeting, Galveston, Tex.—Mayor Lewis Fisher, Chairman of Committee, Galveston, Tex.
- May 29-June 3.  
National Electric Light Association.—Annual Convention, Engineering Societies Building, New York, N. Y.
- June 6-10.  
American Water Works Association.—Thirty-first Annual Convention, Powers Hotel, Rochester, N. Y.—John M. Diven, Secretary, 14 George street, Charleston, S. C.
- June 11-16.  
International Association of Chiefs of Police.—Eighteenth Annual Convention, Rochester, N. Y.—Major Richard Sylvester, Superintendent of Police, Washington, D. C., President.
- June 13-18.  
New York State Association of Chiefs of Police.—Annual Convention, Rochester, N. Y.
- April 6-8.  
American Electrochemical Society.—Annual Meeting at New York City.—Secretary, Joseph W. Richards, Lehigh University, South Bethlehem, Pa.



## PERSONALS

ADAMS, ARTHUR A., Superintendent of Streets of Springfield, Mass., has resigned after eleven years' service in the position. He states that it is his intention to engage in other business. Arthur H. Woodward and Howard O. Buck, Assistant Superintendents, are candidates for the position.

BOLTON, JACKSON, Assistant City Engineer of Richmond, Va., is dead.

BRIDGEFORD, WILLIAM E., First Assistant Chief of the Albany Fire Department, who has been Acting Chief for the past eight months, has been nominated by Deputy Commissioner of Public Safety William J. Rice, to succeed Chief Higgins. The nomination is practically an appointment, although an examination will take place. Chief Bridgeford has been a member of the Albany Department for forty years.

CONNELLY, President of the D. Connelly Boiler Works Company, Cleveland, Ohio, died on February 27 from pneumonia.

DICKSON, C. C., has been chosen Superintendent of Lights and Water at Tecumseh, Neb., succeeding Mr. Frank Freemole.

DICKSON, Fred N., a member of the Board of Police Commissioners, has been named by the Governor of Minnesota to fill the vacancy on the Remsey County District bench.

DOWNEY, I. J., Chief of Police of Sault Ste. Marie, Mich., has resigned.

DUNBAR, DR., Director of the State Hygienic Institute of Berlin, Germany, is visiting the United States for the purpose of studying sewage disposal plants and methods. Dr. Dunbar is the author of "Principles of Sewage Treatment," which was translated into English in 1908 and met with a very favorable reception both by English and American sanitarians. After spending several days in New York as the guest of Dr. Hering, he left last week for a visit to the plant at Cleveland, Ohio, and other Middle and Far Western points.

FELLOWES, F. L., City Engineer of Westmount, Que., has been appointed Supervising Engineer of Vancouver, B. C.

GAMMAGE, ARTHUR L., for several years Assistant Chemist for the Connecticut State Board of Health, has taken a position with Robert Spur Weston, Sanitary Expert of Boston.

HAPGOOD, LYMAN P., has been appointed Assistant Superintendent of the Jamestown, N. Y., water system.

HILGEMAN, HENRY, has resigned from the Board of Public Works of Wayne, Ind.

JIMENEZ, J. J., formerly Superintendent of Public Works, Department of the Interior, Porto Rico, has resigned to enter private practice as consulting and contracting engineer at San Juan, P. R.

KELLY, BENJAMIN A., has been appointed Water Register of the Borough of Manhattan, New York.

LAYFIELD, E. N., formerly Chief Engineer of the Chicago Terminal Transfer R. R., has been appointed a member of the Viaduct Commission of Grand Rapids, Mich.

MANDIGO, CLARK R., has been appointed assistant City Engineer of Kansas City, Mo.

MOORE, CHARLES G., City Engineer of Eau Claire, Wis., has resigned.

STUTLER, BOYD B., of Grantsville, W. Va., is probably the youngest city executive in the United States. He is twenty-one years old. In addition to being Mayor he is also editor of the Grantville News.

## TRADE NOTES

**Cast Iron Pipe.**—Chicago: The demand continues active for all sizes of cast iron pipe. Prices are firm. Quotations: 4-inch, \$25.50; 6 to 12-inch, \$24.50; 16-inch and up, \$24. Birmingham: The prices received for the small lots placed from time to time are very satisfactory, and in view of a stronger pig iron market an advance will no doubt be made. Only about 50 per cent of the available producing capacity is now in operation. Quotations: 4 to 6-inch, \$21; 8 to 12-inch, \$20; over 12-inch, average, \$19. San Francisco: Prices are slightly higher. Requirements of the coming season are very large. New York: Quite a large number of municipal lettings are advertised. Private buying has subsided. Quotations: 6-inch, car loads, \$21 to \$21.50.

**Lead.**—Lead has weakened. Quotations: New York, 4.40c.; St. Louis, 4.25c.

**Cement Sidewalk Paving.**—The Vulcanite Portland Cement Company, Land Title Building, Philadelphia, Pa., have published the sixth edition of their pamphlet No. 7, "Cement Sidewalk Paving Suggestions as to Method of Construction," by Albert Moyer. The instructions are clear and are illustrated so fully that a contractor not familiar with this class of work should be able to follow them and lay a good sidewalk. The instructions also contain points of value even to an experienced contractor. The pamphlet is distributed gratuitously.

**Pumping Engineer.**—The William Tod Company, Youngstown, Ohio, builder of engines and rolling mill equipment, has elected the following officers and directors: John Stambaugh, president; I. H. Reynolds, vice-president and general manager; H. J. Stambaugh, secretary and treasurer; L. A. Woodward, superintendent. Directors: John Stambaugh, I. H. Reynolds, Paul Jones, David Tod and H. H. Stambaugh.

**Valves.**—The Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, has elected the following directors: Henry M. Atwood, Joseph T. Speer, C. A. Anderson, S. G. Patterson, John McCaffrey, J. G. Anderson and William Price. Mr. Price, who is president of the Diamond National Bank, is the new director, taking the place of C. R. Rhodes, deceased.

**New Sewer Pipe Plant.**—The Bibb Brick Company, Macon, Ga., will spend \$50,000 in an extension to its plant within the next few weeks, so as to be able to make sewer pipe and terra cotta work as well as brick. This move was decided upon recently by Messrs. W. J. and O. J. Massee, the principal owners of the concern. The necessary machinery has already been ordered.

**Cast Iron Pipe.**—J. K. Dimmick, Philadelphia, was elected to succeed his son, Fred D. Dimmick, as president of the Dimmick Pipe Company, at a meeting of the directors of the company held in Birmingham, Ala., February 21. Fred D. Dimmick, who has resided at Birmingham, will remove to Philadelphia to take charge of the business of J. K. Dimmick & Co. in that city, and J. K. Dimmick, who has heretofore been at Philadelphia, will remove to Birmingham. James H. Goodapple was elected secretary and treasurer of the company. The directors are James Bowron, Culpepper Exum, Erskine Ramsay, A. J. Goodwin, A. J. Brown, J. K. Dimmick and J. H. Goodapple.

**Aerial Ladder.**—A public test and demonstration of the new 55-foot Seagrave ladder truck for the Felton fire company, Chester, Pa., was made last week. The exhibition was under the direction of R. B. Storm, manager of the New York office of the Seagrave Company, who is also a former chief of the Fire Department of Long Branch, N. J. After the demonstration the fire committee, J. K. Hagerty, chairman, unanimously accepted the truck.

**Fire Protection Company.**—For the purpose of increasing the fire protection facilities in their establishments and to reduce the insurance rates nine of the largest wholesale companies in Fort Smith, Ark., recently organized the Citizens' Fire Protection Company, one of the most unique companies to apply for a charter in Arkansas. The company has a capital stock of \$25,000, of which \$12,500 has been subscribed. It has awarded the contract for the erection of a steel tank with a capacity of 100,000 gallons to be erected on a massive steel tower 150 feet high on some elevated part of the city. This tank will be connected with the wholesale houses when automatic sprinklers will be installed.

**Valves.**—The stockholders of the Chapman Manufacturing Company, Indian Orchard, Mass., are considering a plan proposed by a committee of their number for a financial reorganization of the business, which includes the creation of a new corporation of similar name which would take over the entire stock and business of the present company. The proposition includes increasing the preferred stock from \$300,000 to \$500,000, but also the decreasing of the common stock from \$1,000,000 to \$500,000. The action is taken at the instance of President Adolph W. Gilbert. The consummation of the plan will place the business on a more advantageous basis.

**Largest Automobile Plant.**—The new Studebaker corporation, recently organized, will combine the interests of the E. M. F. plant of Detroit, Mich., and the Studebaker plant at South Bend, Ind. Clement Studebaker, Jr., states that the new company will erect at Detroit the largest automobile plant in the world.

**Road Machinery.**—The Climax Good Roads Machinery Company, Hamilton, Ont., has been granted a charter by the Dominion Government, with a capital stock of \$40,000, to manufacture road machinery. Among the directors are John Robinson, Hanlan Robinson and William J. Robinson.

**Paving Brick.**—The Bessemer Limestone Company, Youngstown, Ohio, manufacturer of paving brick and owner of extensive limestone quarries, has made some changes in its organization. The position of chairman of the board of directors was created, and J. G. Butler, Jr., was elected to that office, retiring from the presidency after a service of 24 years. The resignations of C. S. Crook as treasurer and C. M. Crook as general manager were accepted. John Tod was elected president; C. C. Blair, general manager, and John A. Rowland, secretary and treasurer.

**Water Tanks.**—R. T. McCormick has been appointed manager of sales of the Petroleum Iron Works Company, builder of steel tanks, etc. This company has discontinued its Pittsburgh office, and will handle Pittsburgh territory business from its general offices at Sharon, Pa. Its branch offices located in various cities will be continued.

## THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

### ROADS AND PAVEMENTS

**Road Work in Allegheny, Pa.** Illustrated, 2 pp., Engineering-Contracting, Feb. 8. 10 cts.

**Good Roads Work in Washington.** Paper before American Road Builders' Association. By Frank Terrace. 1 p., Good Roads February. 10 cts.

**Dustless Roads of California.** Paper before American Automobile Association. By A. B. Fletcher. 2 1-2 pp., Good Roads, February. 10 cts.

**Highways of the Northwest.** Paper before American Road Builders' Association. By S. H. Lea, State Engineer of South Dakota. 2 pp., Good Roads, February. 10 cts.

**Collinsville and East St. Louis Road.** Paper before the Illinois Society of Engineers and Surveyors. By A. N. Johnson. Illustrated, 1 p., Engineering Record, Feb. 25. 10 cts.

**Organization of Road Building in Canada.** By W. A. McLean, Provincial Engineer of Highways for Ontario. 2 pp., Contract Record, Feb. 1. 20 cts.

**Roads and Bridges.** Annual review of progress. 4 pp., Surveyor, Jan. 27. 20 cts.

**Good Roads.** Paper before Union of Manitoba Municipalities. By A. McGillivray. 3 pp., Canadian Engineer, Feb. 23. 15 cts.

**Meetings, Special Road, of the American Society of Civil Engineers.** 4 pp., Good Roads, February. 10 cts.

**Commission, Experimental Work of the Illinois Highway.** Paper before Illinois Society of Engineers. By T. R. Agg. Illustrated, 4 pp., Engineering-Contracting, Feb. 22. 10 cts.

**Concerning the New York State Highway Commission and the Commission Plan of Conducting Public Works.** 1 2-3 p., Engineering News, Feb. 9. 15 cts.

**Road Construction in Dry Regions.** By C. R. Thomas. 1 p., Good Roads, February. 10 cts.

**Road Building in New York State; with Additional Data on Top Course of 2-in. Cubes of Clay and Concrete.** By W. G. Harger. 2 pp., Illustrated, Engineering News, Feb. 2. 15 cts.

**Building Fall Creek Drive, Indianapolis.** Novel Method of Transporting Earth. Illustrated, 2 1-2 pp., Contractor, Feb. 1. 20 cts.

**Lake Front Drive in Wisconsin.** Illustrated, 1 1-2 pp., Good Roads, February. 10 cts.

**Top-Soil Methods of Road Construction Used in Clarke County, Georgia.** By C. M. Strahan. Illustrated, 4 1-2 pp., Southern Good Roads, January. 10 cts.

**Constructing Macadam Road under Unfavorable Drainage Conditions.** Illustrated, 1 1-2 pp., Engineering-Contracting, Feb. 15. 10 cts.

**Roemac Method of Road Construction.** Illustrated, 2 pp., Good Roads, February. 10 cts.

**Meadow Roads as Constructed in Southern New Jersey Counties.** Paper before New Jersey Association of County Engineers. By E. D. Rightmire. 1 p., Engineering-Contracting, Feb. 22. 10 cts. 1 p., Engineering Record, Feb. 11. 10 cts. 2-3 p., Engineering News, Feb. 9. 15 cts.

**Bituminous Highway Construction.** Paper before Illinois Society of Engineers and Surveyors. By T. R. Agg. 2 1-2 pp., Contractor, Feb. 15. 20 cts.

**Definitions and Discussion of Various Bituminous Materials used in Road Construction and Maintenance.** 3 pp., Engineering-Contracting, Feb. 8. 10 cts.

**Bituminous Concrete Roadways.** From discussion before New Jersey State Association of County Engineers. By F. J. Eppele. 1-2 p., Municipal Journal and Engineer, Feb. 15. 10 cts.

**Oil Macadam Work in California.** Discussion before League of California Municipalities. 16 pp., Pacific Municipalities, January. 20 cts.

**Road Maintenance in Cornwall.** By A. E. Brookes. 1 1-4 pp., Surveyor, Feb. 3. 20 cts.

**Patrol System of Maintenance Adopted by Allegheny County, Pa.** By M. O. Eld-

ridge. Illustrated, 3 1-2 pp., Good Roads, February. 10 cts.

**Traffic, Relation Between Modern, and the Alignment and Profile in Highway Design.** Paper before American Association for the Advancement of Science. By H. B. Drowne. 1 p., Engineering-Contracting, Feb. 8. 10 cts.

**London Traffic.** Board of Trade Report. 1 p., Surveying and Civil Engineer, Feb. 17. 20 cts.

**Methods of Taking Traffic Census on Highways.** Paper before American Association for the Advancement of Science. By A. H. Blanchard and I. W. Patterson. 2 1-2 pp., Surveyor, Feb. 17. 20 cts.

**Comparison of English and American Traffic Regulations.** By A. R. Blanchard. 3 pp., Surveyor, Feb. 10. 20 cts.

**To What Extent Do Automobiles Destroy Our Roads?** By L. W. Page. Illustrated, 2 pp., Southern Good Roads, February. 10 cts.

**Forestry, Relation of Good Roads to Economic.** By J. S. Holmes, forester. North Carolina Geological and Economic Survey. Illustrated, 33 pp., Southern Good Roads, February. 10 cts.

**Road Laws and Road Building.** Address before Southern Appalachian Good Roads Association. By M. O. Eldridge. Illustrated, 3 1-2 pp., Southern Good Roads, February. 10 cts.

**Men in Highway Work, Opportunity for Technically Trained.** Paper before American Association for the Advancement of Science. By A. N. Johnson. 2 pp., Good Roads, February. 10 cts.

**Opportunity for Engineers in Highway Work.** Address delivered before American Good Roads Congress. By A. N. Johnson. 2-3 p., Engineering News, Feb. 2. 15 cts.

**Paving and Lighting a Small City.** Description of the kind of pavement laid in Rochelle, Ill., and reasons for selecting foundation and surface material. By P. E. Green. Illustrated, 2 pp., Municipal Journal and Engineer, Feb. 8. 10 cts.

**Street Paving in Germany.** 1 p., Surveyor, Feb. 10. 20 cts.

**Brick Pavement Details.** 1-4 p., Municipal Journal and Engineer, Feb. 8. 10 cts.

**Motion in Brick Pavements.** Investigation to determine causes and extent. 1-4 p., Municipal Journal and Engineer, Feb. 8. 10 cts.

**Cracking of Cement Grouted Brick Pavements.** Paper before Michigan Engineering Society. By E. R. Whitmore. 1 1-2 pp., Engineering-Contracting, Feb. 15. 10 cts.

**Good Roads Talk.** Address before National Paving Brick Manufacturers' Association. By Jesse Taylor, Secretary, Ohio Good Roads Federation. 1 p., Brick, Feb. 15. 10 cts.

**Concrete Pavements in Kansas City, Mo.** 1 p., Engineering Record, Feb. 25. 10 cts.

**Asphaltic Oils for the Preservation of Railway Ties.** Paper before Wood Preservers' Association. By F. W. Cherrington. 2-3 p., Engineering News, Feb. 2. 15 cts.

**Sidewalk, Curb and Gutter Construction, Some New Methods in.** Paper before National Association of Cement Users. By J. B. Landfield. 1 p., Concrete, February. 15 cts.

**Constructing Asphalt Drive and Peculiar Concrete Curb, Lincoln Park, Chicago.** Illustrated, 1 p., Engineering-Contracting, Feb. 15. 10 cts.

**Grade Crossings in Cleveland, Ohio.** Elimination of Railway. Paper before Cleveland Engineering Society. By Robert Hoffman. 1 p., Engineering News, Feb. 2. 15 cts.

**Landscape Point of View, Streets from the.** By A. T. Edwin. 2 pp., American City, February. 10 cts.

### SEWERAGE AND SANITATION

**Sewer Construction.** Important Concrete Work in Toronto Sewer System. Illustrated, 1 p., Concrete, February. 15 cts.

**Ditching and Trenching Machinery.** Paper before Illinois Society of Engineers

and Surveyors. By E. E. R. Tratman. 3 pp., Contractor, Feb. 1. 20 cts.

**The Classification of Sewer Trench Excavation.** 2-3 p., Engineering Record, Feb. 11. 10 cts.

**Small Dredge for Sewage Channels.** By E. S. Rankin, engineer of sewers and drainage, Newark, N. J. Illustrated, 3-4 p., Municipal Journal and Engineer, Feb. 8. 10 cts.

**Sewer Pipe, Standard Tests for.** 1-3 p., Engineering Record, Feb. 25. 10 cts.

**Cost of Constructing Reinforced Concrete Sewer Pipe at Mishawaka, Ind.** Paper before Indiana Engineering Society. By W. P. Moore. 1 p., Engineering-Contracting, Feb. 15. 10 cts.

**Sewerage District, Threatened Disintegration of the Passaic Valley.** 3 pp., Engineering News, Feb. 23. 15 cts.

**Sewage Pumping in New Orleans.** Operation of six electric automatic stations. Descriptions and cost of plant and cable lines. Efficient and absolutely reliable. Illustrated, 2 1-2 pp., Municipal Journal and Engineer, Feb. 22. 10 cts.

**Sewer Cleaning in New Orleans.** 1-4 p., Municipal Journal and Engineer, Feb. 22. 10 cts.

**Sewage Disposal at Ohio State Tuberculosis Hospital.** By Paul Hansen. Illustrated, 2 pp., Engineering Record, Feb. 18. 10 cts.

**Sewerage and Sewage Disposal.** Annual review of progress in. 7 pp., Surveyor, Jan. 27. 20 cts.

**Recent Investigations on Sewage Disposal.** Extract from report of Committee on Sewage Disposal, Canadian Society of Civil Engineers. 4 pp., Contract Record, Feb. 1. 20 cts.

**Market Harbor Sewage Disposal Works.** By H. W. Coles. Illustrated, 4 pp., Surveyor, Feb. 17. 20 cts.

**Sewage Purification in Indo-China.** By Gabriel Lambert. 6 1-2 pp., La Technique Sanitaire, February. 50 cts.

**Irrigation Fields of Berlin.** By Dr. Bruno Heine. Illustrated, 2 pp., La Technique Sanitaire, February. 50 cts.

**Filter, Chimney for Ventilating Sewage.** 3-4 p., Municipal Journal and Engineer, Feb. 22. 10 cts.

**Emscher Tanks for Erie.** For the classification of sewage to be discharged into Lake Erie. Detail plans for a 15,000,000-gallon plant. Illustrated, 3 1-2 pp., Municipal Journal and Engineer, Feb. 15. 10 cts.

**Sprinkling Filter Plant for Suburban Community.** By Paul Hansen. From Municipal Journal and Engineer. Illustrated, 5 pp., Canadian Engineer, Feb. 2. 10 cts.

**Odors from Sprinkling Filters.** 1-2 p., Municipal Journal and Engineer, Feb. 22. 10 cts.

**Covered Sprinkling Filter.** 1-4 p., Municipal Journal and Engineer, Feb. 22. 10 cts.

**Disinfection of Sewage and Sewage Filter Effluents.** By Earl B. Phelps. Paper before Boston Society of Civil Engineers. 8 pp., Journal, Association of Engineering Societies, January. 30 cts.

**Drainage Improvements at Syracuse.** Illustrated, 2 2-3 pp., Engineering Record, Feb. 25. 10 cts.

**Drains and Sewers.** By H. Lemmoin-Cannon. Illustrated, 1 1-2 pp., Surveying and Civil Engineer, Feb. 10. 20 cts. 1 1-2 pp., Feb. 17. 20 cts.

**Sanitation of Small Towns and Villages.** Paper before Union of Manitoba Municipalities. By Dr. Simpson. 2 1-2 pp., Western Municipal News, February. 15 cts.

**Canadian Public Health Exhibit.** To be held at National Fair. 1-4 p., Municipal Journal and Engineer, Feb. 8. 10 cts.

**Efficiency and Economy in Municipal Health Work.** By W. A. Evans and C. St. Clair Drake. 4 pp., American City, February. 10 cts.

**Co-operation in Sanitary Work.** Presidential address before Institute of Sanitary Engineers. By A. J. Martin. 3 pp., Surveyor, Feb. 10. 20 cts.

**Progress of Sanitation.** Address before Conference of Sanitary Inspectors. By W. Urquhart. 4 pp., Journal, Royal Institute of Public Health, February. 60 cts.

**Future of Sanitation.** From paper be-



fore Institute of Sanitary Engineers. By A. J. Martin. 2 1-2 pp., Surveying and Civil Engineer, Feb. 10. 20 cts.

**Typhoid and Tuberculosis—The Public's Responsibility.** By Earl Mayo. 6 pp., Outlook, Feb. 11. 5 cts.

**Sanitary Law in India.** By Colonel W. G. King. 16 pp., Journal, Royal Institute of Public Health, February. 60 cts.

**Drinking Fountains, Sanitary.** Compilation of laws and health regulations of different States and description of a number of types of fountains. Illustrated, 8 pp., Engineering Review, February. 10 cts.

**Baths, Pollution of Water in Public.** Investigations in Hamburg, Germany. Pollution of water after various intervals of use; sand filtration effective; aeration unnecessary. 1 1-2 pp., Municipal Journal and Engineer, Feb. 22. 10 cts.

## WATER SUPPLY

**Water Supply.** Annual review of progress in. 6 pp., Surveyor, Jan. 27. 20 cts.

**Municipal Water Supply.** By A. G. Graves. Paper before Union of Alberta Municipalities. 3 pp., Western Municipal News, February. 15 cts.

**Public Water Supplies.** By J. W. Hill. 6 pp., Bulletin Ohio State Board of Health, January.

**Surface Water Supplies for Small Communities.** Paper before Royal Sanitary Institute. By A. P. I. Cotterell. 2 pp., Surveyor, Feb. 17. 20 cts.

**Stream Flow in Pennsylvania, Droughts and.** By Farley Gannett. 12-3 pp., Engineering Record, Feb. 25. 10 cts.

**Determination of Stream Flow During the Frozen Season.** By C. R. Adams. 3 pp., Engineering News, Feb. 2. 15 cts.

**Conservation of British National Water Resources.** By W. R. Baldwin-Wiseman. 5 pp., Surveying and Civil Engineer, Feb. 3. 20 cts. 3 pp., Feb. 10. 20 cts. 4 pp., Feb. 17. 20 cts.

**Impure Water, Liability for. Different views taken by State courts.** 3-4 p., Municipal Journal and Engineer, Feb. 22. 10 cts.

**State Boards in New York and Other States, Multi-Control of Water Works by.** 1 p., Engineering News, Feb. 9. 15 cts.

**Water Works, Dayton.** 1-4 p., Municipal Journal and Engineer, Feb. 22. 10 cts.

**Toledo Water Works Notes.** 1-4 p., Municipal Journal and Engineer, Feb. 22. 10 cts.

**Columbia Water Works. Pumping by hydraulic power plant; turbines and centrifugal and plunger pumps; auxiliary steam plant; purification by mechanical filters of the gravity type.** By John McNeal, city engineer. Illustrated, 2 pp., Municipal Journal and Engineer, Feb. 8. 10 cts.

**Seattle Water Works System.** Illustrated, 11-2 pp., Fire and Water, Feb. 1. 10 cts.

**Water Works System of Winnipeg.** By R. D. Willison, assistant city engineer. Illustrated, 12-3 pp., Fire and Water, Feb. 8. 10 cts.

**London Water Supply.** 2-3 p., Contract Journal, Feb. 15. 20 cts.

**Reservoir, a Reinforced Concrete, at Kensington, Conn.** By Arthur W. Bacon. Illustrated, 11-3 pp., Engineering Record, Feb. 18. 10 cts.

**Construction of Brown's Reservoir.** 11-3 pp., Engineering Record, Feb. 11. 10 cts.

**New Reservoir at Oakland.** 2-3 pp., Fire and Water, Feb. 1. 10 cts.

**Dam, Design and Computations for a Cellular Reinforced Concrete.** Paper before Colorado Scientific Society. By G. J. Bancroft. Illustrated, 31-2 pp., Canadian Engineer, Feb. 9. 15 cts.

**The Azisobos Reservoir Dam in Maine.** Paper before National Association of Cement Users. By S. A. Moulton. Illustrated, 4 pp., Contractor, Feb. 1. 20 cts.

**Construction of the New Croton Dam.** Paper before American Society of Engineering Contractors. By Edw. Wegmann and J. B. Goldsborough. Illustrated, 61 pp., Journal Society of Engineering Contractors, November.

**Standpipe, Concrete of Maximum Density for a.** Illustrated, 1 p., Engineering Record, Feb. 11. 10 cts.

**Methods Used in Obtaining Concrete of Maximum Density for the Westerly, R. I., Standpipe.** Remarks before Boston Society of Civil Engineers. By A. B. MacMillan. Illustrated, 1 p., Engineering-Contracting, Feb. 15. 10 cts.

**Pipe, Reinforced-Concrete Pressure, on the Umatilla Project, Ore., U. S. Reclamation Service.** By Herbert D. Newell. Illustrated, 22-3 pp., Engineering News, Feb. 16. 15 cts.

**Tunnel and Intake Crib, The Construction of the Buffalo Waterworks.** By C. H. Hollingsworth. Illustrated, 82-3 pp., Engineering News, Feb. 9. 15 cts.

**Aqueduct, Tufa Concrete on the Los Angeles.** Paper before National Association of Cement Users. By J. B. Lippincott. Il-

lustrated, 5 pp., Cement Age, February. 15 cts.

**Infiltration Plants, Some Features of Design of.** Paper before the Ohio Engineers Society. By Philip Burgess. 11-3 p., Engineering Record, Feb. 4. 10 cts.

**Water Purification and Its Application at Grand Forks.** Paper before North Dakota Civil Engineers. By H. G. Lykken, city engineer, 1 p., Fire and Water, Feb. 15. 10 cts.

**Filters, Construction of Springfield.** From paper before Boston Society of Civil Engineers. By C. R. Dow, 51-2 pp., Contractor, Feb. 15. 20 cts.

**Form Work for Arch Reservoir and Conduits, Pittsburgh Filtration Works.** Paper before Engineers Society of Western Pennsylvania. By J. D. Stevenson. Illustrated, 8 pp., Canadian Engineer, Feb. 16. 15 cts.

**Double Filtration of Water.** From paper by H. W. Clark before New England Water Works Association. 1-2 p., Municipal Journal and Engineer, Feb. 8. 10 cts.

**Sterilization of Public Water Supplies.** By Geo. A. Johnson. Paper before Boston Society of Civil Engineers. 12 pp., Journal Association of Engineering Societies, January. 30 cts.

**Temporary Water Disinfecting Plant at Brainerd.** By Frederick Bass. Illustrated, 1 p., Engineering Record, Feb. 11. 10 cts.

**Hypochlorite Treatment of the Omaha Water Supply.** By Jay Craven. Illustrated, 1 p., Engineering Record, Feb. 4. 10 cts.

**Lime for Water Purification.** Paper before Indiana Sanitary and Water Supply Association. By W. R. Copeland, chemist Columbus, O., water purification works. 1 p., Fire and Water, Feb. 22. 10 cts.

**Effect of Hypochlorite of Lime Solution on Metals.** Paper before New England Water Works Association. By H. C. Stevens. 1 p., Engineering-Contracting, Feb. 8. 10 cts.

**The Sterilization of Water by Ultraviolet Rays.** By Max von Recklinghausen. Illustrated, 5 pp., La Technique Sanitaire, February. 50 cts.

**Electrolytic Purification, Experience in Massachusetts and California.** 1-3 p., Municipal Journal and Engineer, Feb. 8. 10 cts.

**Water Analysis and the Public Health.** Paper before Union of Alberta Municipalities. By D. G. Revell, provincial bacteriologist for Alberta. 5 pp., Western Municipal News, February. 15 cts. 4 pp., Canadian Engineer, Feb. 23. 15 cts.

**Memorandum on the Routine Examination of Indian Water Supplies.** By Brevet-Colonel R. H. Firth, Royal Army Medical Corps. 5 pp., Indian Public Health, January. 25 cts.

**Water Rates.** Comment on their meaning and lack of meaning. 1-3 p., Municipal Journal and Engineer, Feb. 15. 10 cts.

**Water Rates in Many Cities.** An analysis of flat and meter rates in 249 cities. Very wide range of rates. 1 p., Municipal Journal and Engineer, Feb. 15. 10 cts.

**Rate of Acquisition of Income for Domestic Water Service from Different Classes of Residential Property.** Paper before New England Water Works Association. By F. C. Jordan. Illustrated, 2-3 p., Engineering-Contracting, Feb. 8. 10 cts.

**Valuation of the Physical Property of the Peoria Water Company, with the discussion of rate making and of reasonable rates.** 3 pp., Engineering-Contracting, Feb. 15. 3 pp., Feb. 22. 10 cts.

**Meterage, Strong Plea for.** By F. E. Wing. 2-3 p., Fire and Water, Feb. 22. 10 cts.

**Labor Saving Devices Found Useful in Water Works Plants.** Illustrated, 1 p., Engineering Record, Feb. 25. 10 cts.

**Records, Pipe System.** By R. D. Gwinn. 1 p., Engineering-Contracting, Feb. 22. 10 cts.

**Efficiency in the Department of Water Supply, New York City, An Official Statement Regarding Progress and Increased.** 2-3 p., Engineering News, Feb. 16. 15 cts.

## STREET LIGHTING AND POWER PLANTS

**Street Lighting.** Annual review of progress in. 2 pp., Surveyor, Jan. 27. 20 cts.

**Chicago Street Lighting.** Report of Commission of City Expenditures. 3-4 p., Municipal Journal and Engineer, Feb. 8. 10 cts.

**German vs. American Street Lighting.** By R. F. Pierce. Illustrated, 3 pp., Public Service, February. 20 cts.

**Lamps in New York, Flaming Arc.** By H. Thurston Owens. Illustrated, 11-2 pp., Electrical Review, Feb. 25. 10 cts.

**Municipal Control of Construction and Maintenance of Pole and Pipe Lines.** Paper before Union of Nova Scotia Municipalities. By F. W. W. Doane. 21-2 pp., Canadian Municipal Journal, February. 10 cts.

**Poles, Some Observations on the Attack of, by Woodpeckers.** By Howard F. Weiss.

Illustrated, 1 p., Engineering News, Feb. 23. 15 cts.

**Gas Holder, Construction of Reinforced Concrete Tank for.** Paper before American Gas Institute. By V. L. Elbert. Illustrated, 9 pp., American Gas Light Journal, Feb. 13. 10 cts.

**Meters, Accuracy of Consumers'.** Paper before American Gas Institute. By W. A. Castor. 41-2 pp., American Gas Light Journal, Feb. 27. 10 cts.

**Gas Calorimetry, Technical.** Paper before Society of Chemical Industry. By J. H. Coste. Illustrated, 7 pp., Chemical Engineer, February. 25 cts.

**Sampling Fuel Gas.** Illustrated, 1-2 p., Municipal Journal and Engineer, Feb. 15. 10 cts.

**Hydro-electric Development at Ventavon, France.** Illustrated, 12-3 pp., Engineering Record, Feb. 18. 10 cts.

**Municipal Hydro-electric Power Development at Revelstroke.** Illustrated, 31-2 pp., Canadian Engineer, Feb. 16. 15 cts.

**Water Power in New York State, Reasons for Public Development and Control of.** 1 p., Engineering News, Feb. 16. 15 cts.

**Boiler Efficiency, Combustion and.** By E. A. Uehling. Paper before American Society of Mechanical Engineers. 5 pp., Industrial Engineering, February. 20 cts.

## FIRE DEPARTMENT

**Fire Hazard, Report on Woonsocket.** 1 p., Fire and Water, Feb. 1. 10 cts.

**Fire Starting from Steam Pipes.** Illustrated, 2-3 p., Fire and Water, Feb. 22. 10 cts.

**Report on Fire Conditions at Sacramento, Cal.** 2-3 p., Fire and Water, Feb. 22. 10 cts.

**Is There Danger of Big Conflagration in New York?** 1 p., Fire and Water, Feb. 15. 10 cts.

**Fire Resistance, Building Materials from the Standpoint of.** Discussion before the American Society of Mechanical Engineers. Illustrated, 6 pp., Cement Age, February. 15 cts.

**Evolution of Fire-Resisting Construction.** Paper before Surveyors' Institution. By Wm. Woodward. 3 pp., Surveying and Civil Engineer, Feb. 10. 20 cts. 11-2 pp., Surveyor, Feb. 10. 20 cts.

**How to Build Chimney.** Illustrated, 1 p., Fire and Water, Feb. 22. 10 cts.

**Fire Protection at Clarksburg, W. Va.** 1-2 p., Fire and Water, Feb. 8. 10 cts.

**Report on Fire Protection at Colorado Springs.** 3-4 p., Fire and Water, Feb. 22. 10 cts.

**High Pressure Fire System for Boston.** By the Committee on Fire Prevention of the National Board of Fire Underwriters. 2 pp., Engineering Record, Feb. 18. 10 cts.

**Fire Loss and How It Can be Reduced.** By W. H. Merrill. 2-3 p., Engineering News, Feb. 9. 15 cts.

**Fire Department Improvements at Grand Rapids.** 1 p., Fire and Water, Feb. 8. 10 cts.

**Report on Fire Service at Stockton.** 2-3 p., Fire and Water, Feb. 1. 10 cts.

**Repair Shop for Boston, New.** Illustrated, 1-2 p., Fire and Water, Feb. 8. 10 cts.

## GOVERNMENT AND FINANCE

**Commission Government.** Cities which have adopted it to date; what is meant by this term; essential features; non-essential features; number of commissioners and length of term. 31-2 pp., Municipal Journal and Engineer, Feb. 22. 10 cts.

**Will Commission Government Succeed in Large Cities?** By R. S. Childs. 3 pp., American City, February. 10 cts.

**Government by Commission.** By C. R. Woodruff. 11-3 pp., Municipal Journal, Jan. 28. 15 cts.

**Municipal Profits in England.** 3-4 p., Canadian Municipal Journal, February. 10 cts.

**Mayor's Cabinet as Organized in Kansas City, Mo.** By Mayor D. A. Brown. 1-2 p., Municipal Journal and Engineer, Feb. 15. 10 cts.

**Semi-Official Municipal Body.** 1-3 p., Municipal Journal and Engineer, Feb. 15. 10 cts.

**Municipal Review, 1909-1910.** By C. R. Woodruff. 33 pp., Journal of Sociology, January. 50 cts.

**Legislation of 1909 and 1910 in Great Britain in Relation to Municipal Engineering.** 6 pp., Surveyor, Jan. 27. 20 cts.

**Bonds, Issue of Municipal.** Paper before League of Third Class Cities in Pennsylvania. By Park Terrell. 4 pp., American City, February. 10 cts.

**Apportionment of Cost of Construction and Maintenance of the Massachusetts Metropolitan Sewerage, Park and Water Systems.** By J. Albert Holmes. 2 pp., Engineering News, Feb. 23. 15 cts.

**Records, Value of City.** 1-3 p., Municipal Journal and Engineer, Feb. 8. 10 cts.

## TRAFFIC AND TRANSPORTATION

- Urban Transportation Problem.** A general discussion. By B. J. Arnold. 11 pp., Annals of the American Academy of Political and Social Science, January. \$1.
- City Transportation Problems:** A Report by Bion J. Arnold on the Pittsburgh Situation. Illustrated, 3 pp., Engineering News, Feb. 9. Illustrated, 4 pp., Engineering News, Feb. 16. 15 cts.
- Presentation of Interurban Problems to the Public.** By A. E. D. Van Zandt. 9 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Investigation of Traffic Possibilities of Proposed Subway Line.** By W. S. Twinning. 9 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Educating the Public to a Proper Appreciation of Urban Street Railway Problems.** By A. W. Warnock. 6 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Efficiency of Surface Lines in Large Cities, Methods of Increasing the.** By Williston Fish. 16 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Financial Returns upon Urban Street Railway Properties, Decreasing.** By Thos. Connelly. 17 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Express Business on Interurban Lines.** By A. Eastman. 4 pp., Annals of American Academy of Political and Social Science, January. \$1.00.
- Freight Traffic on Interurban Lines, Possibilities of.** By F. S. Cummings. 10 pp., Annals of American Academy of Political and Social Science, January. \$1.00.
- Cars for Urban Service, Economic Factors in the Selection of.** By S. M. Curwen. Illustrated, 10 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Depreciation Problem.** By Wm. B. Jackson. 12 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Valuations of Interurban Street Railways, Logical Basis for.** Paper before Central Electric Railway Association. By C. G. Young. 7 pp., Electrical Review, Feb. 4. 10 cts.
- Tramways.** Annual Review of Progress in. 2 pp., Surveyor, Jan. 27. 20 cts.
- The Year of Tramways.** Official returns comparing municipal and company undertaking. 11-2 pp., Municipal Journal, Feb. 11. 15 cts.
- Electrification of the Steam Railway Lines Entering Boston, Report of the "Joint Board on Metropolitan Improvements" on the.** By A. H. Smith and E. H. McHenry. 2-2-3 pp., Engineering News, Feb. 2. 15 cts.
- Subway System for Chicago, The Proposed.** Illustrated, 21-3 pp., Engineering News, Feb. 23. 15 cts.
- Plans and Estimates for Chicago Subway System.** Illustrated, 7 pp., Engineering-Contracting, Feb. 15. 10 cts.
- McAdoo and the Subway. The Building and Builder of the Hudson tunnels.** By Burton J. Hendrick. Illustrated, 16 pp., McClure's, March. 15 cts.
- Franchises—Public and Company Rights.** By A. S. Huey. 31-2 pp., Public Service, February. 20 cts.
- The Indeterminate Permit as a Satisfactory Franchise.** By W. O. Morgan. 8 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Intangible Street Railway Property, Valuation of.** By F. R. Ford. 23 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Engineers and Street Railway Service, Supervising.** 22 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Street Railway Civil Engineer.** By C. H. Clark. 3 pp., Cornell Civil Engineer, February. 20 cts.
- State Supervision of Electric Railways in Wisconsin.** By E. H. Meyer. 20 pp., Annals of American Academy of Political and Social Science, January. \$1.

## BRIDGES AND MATERIALS OF CONSTRUCTION

- Bridges and Culverts, Construction of Highway.** 1-2 p., Contractor, Feb. 15. 20 cts.
- Michigan Bridges and Culverts.** By E. N. Hines, county road commissioner, Wayne County. 3 pp., Public Officials' Magazine, January. 10 cts.
- Designing Concrete Abutments for Steel Highway Bridges.** Paper read at the annual meeting of the Illinois Society of Engineers and Surveyors. By H. E. Bilger. Illustrated, 1 p., Engineering News, Feb. 16. 15 cts. Illustrated, 21-2 pp., Engineering-Contracting, Feb. 15. 10 cts.
- The Grafton Bridge at Auckland, New**

- Zealand.** By Walter E. Bush. Illustrated, 3 pp., Engineering Record, Feb. 18. 10 cts.
- Bridge Collapse Caused by a Remarkable Abutment Failure.** By Cornelius M. Daily. Illustrated, 2-3 p., Engineering News, Feb. 16. 15 cts.
- The Hackensack River Bridge Piers.** Illustrated, 11-3 pp., Engineering Record, Feb. 25. 10 cts.
- Concrete Bridges in Augusta County, Va.** Illustrated, 1 p., Good Roads, February. 10 cts.
- Building a Concrete Bridge under Difficult Conditions.** By W. M. Denman. Illustrated, 11-3 p., Engineering Record, Feb. 25. 10 cts.
- Noteworthy Reinforced Concrete Bridge.** By T. A. S. Hay, city engineer, Peterborough. Illustrated, 3 pp., Contract Record, Feb. 1. 20 cts.
- Through Reinforced-Concrete Arch Bridge.** By E. A. Gast. Illustrated, 12-3 pp., Engineering News, Feb. 16. 15 cts.
- Arch-Bridge with Sidewalks through Abutments.** Illustrated, 1 p., Engineering Record, Feb. 25. 10 cts.
- The Fifth Avenue Viaduct at Seattle.** Illustrated, 11-3 pp., Engineering Record, Feb. 18. 10 cts.
- Crushed Stone, Items in the Cost of Producing.** 2-3 p., Engineering Record, Feb. 18. 10 cts.
- Concrete, Some Thermal Properties of.** Paper before National Association of Cement Users. By C. L. Norton. Illustrated, 5 pp., Cement Age, February. 15 cts.
- Tensile Tests of Large Concrete Specimens.** 1-3 p., Engineering Record, Feb. 18. 10 cts.
- Notes on Forms for Concrete.** Paper before Engineers' Society of Western Pennsylvania. By J. D. Stevenson. 21-2 pp., Contractor, Feb. 1. 20 cts.
- Tests of Reinforced Concrete Columns with Various Kinds of Transverse Reinforcement.** Illustrated, 11-3 pp., Engineering News, Feb. 23. 15 cts.
- Piles, Over-Driven, Brooklyn Fourth Avenue Subway Construction.** By S. P. Brown. Illustrated, 1 p., Engineering News, Feb. 23. 15 cts.
- Electrolysis, Effect of, on Metal Imbedded in Concrete.** Paper before National Association of Cement Users. By C. M. Chapman. Illustrated, 4 pp., Concrete, February. 15 cts.
- Columns, Investigation of Built-up, under load.** By A. N. Talbot and H. F. Moore. Illustrated, 64 pp., University of Illinois, Bulletin No. 40.
- The Strength of Piers or Columns of Different Materials.** Illustrated, 1-3 p., Engineering News, Feb. 9. 15 cts.
- Water-Proofing Concrete, Tests of Soft Soap for.** 2-3 p., Engineering Record, Feb. 25. 10 cts.
- Experiments Made with Waterproofing with Water.** Paper before National Association of Cement Users. By C. M. Chapman. Illustrated, 3 pp., Concrete, February. 15 cts.

## MISCELLANEOUS

- Town Planning.** Suggestions for improvement of Southport on a system of radiating boulevards. Illustrated, 3 pp., Municipal Journal, Jan. 28. 15 cts.
- A Small City's Plan for Growth.** By H. J. Hooker. Description of Altus, Okla. Illustrated, 5 pp., American City, February. 10 cts.
- Relation of City Planning to the Municipal Budget.** Address before Conference of New England Mayors. By G. A. Ford. 6 pp., American City, February. 10 cts.
- The City Practical.** Popular discussion of report by Mr. F. L. Olmsted on the improvement of Pittsburgh. By H. F. Howland. Illustrated, 10 pp., Outlook, Feb. 25. 15 cts.
- Pittsburgh City Plan.** Thoroughfares, civic centers and waterfront. By F. L. Olmsted. Illustrated, 22 pp., Survey, Feb. 4. 25 cts.
- City Surveys for Town Planning.** Paper before Birkenhead Congress of 1910. By Prof. P. Geddes. Illustrated, 11 pp., Journal Royal Institute of Public Health, February. 60 cts.
- Housing Conditions in Chicago: Back of the Yards.** By S. P. Brechinridge and Edith Abbott. Illustrated, 34 pp., Journal of Sociology, January. 50 cts.
- Housing and Town Planning Progress.** Official monthly record. 1 p., Municipal Journal, Feb. 11. 15 cts.
- The Housing Awakening.** New tenants and old shacks. By R. N. Baldwin, secretary St. Louis Civic League. Illustrated, 3 pp., Survey, Feb. 18. 10 cts.
- Municipal Furnished Rooms.** A novel proposal for solving the housing problem. By Isaac Priestley, sanitary inspector, Manchester. Illustrated, 2 pp., Municipal Journal, Feb. 11. 15 cts.
- Coalition of Pittsburgh's Civic Forces.** By A. T. Burns. 7 pp., Survey, Feb. 4. 25 cts.

- Regulation in New York, Fruits of Public.** By M. R. Maltbie. 21 pp., Annals of American Academy of Political and Social Science, January. \$1.
- Ferries, New York's Municipal.** More than six million dollars lost in city ownership project. By W. F. Brashears. Illustrated, 2 pp., Public Service, February. 20 cts.
- Telephone System of Greater New York.** Description of the largest plant in the world. From address by President U. N. Bethell. Illustrated, 7 pp., Electrical Review, Feb. 25. 10 cts.
- Garage and Automobile Service at St. Louis, Mo., Municipal.** Fifteen machines cared for; controlling use to prevent improper use; economies effected by the use of automobiles. By C. C. Casey. Illustrated, 2 pp., Municipal Journal and Engineer, Feb. 15. 10 cts.
- Foundations at the Municipal Building, New York, Testing.** Illustrated, 11-3 pp., Engineering Record, Feb. 18. 10 cts.
- Abattoirs, Liverpool.** 1 p., Municipal Journal, Feb. 11. 15 cts.
- Port Facilities of Philadelphia, Improvement of the 2-3 p., Engineering News, Feb. 16. 15 cts.**
- Explosives, Danger of Handling.** 1-2 p., Fire and Water, Feb. 15. 10 cts.

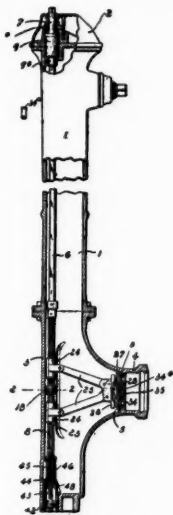
## BOOK REVIEWS

- Municipal Chemistry.** Edited by Chas. Baskerville. Published by McGraw-Hill Book Company, New York City. 8vo. 526 pages. Price \$5.00 net.
- This book comprises a series of lectures delivered under the auspices of the College of the City of New York in 1910, which were open to the public. There are thirty lectures in all, the general subjects treated of being water, milk, food, drugs, streets, city wastes, gas, smoke, ventilation, personal hygiene, combustibles, paint, iron, concrete and parks. These thirty lectures were delivered by twenty different authorities, experts and city officials, and, as might be expected, the nature of the lectures varies greatly. Some are quite general and popular in their nature, while others give exact and technical information. While in general the lectures deal with chemistry as applied to the various functions of complex city life, in some of them this idea is almost entirely obscured by other cases of information concerning the subject; as, for instance, in the case of the lecture on street sanitation, by Wm. H. Edwards, Commissioner of Street Cleaning, of New York City. In other lectures on Waste Disposal, delivered by Mr. Edward D. Very, a great deal of the matter treats of the general method of collecting and disposing of wastes by dumping, the removal of snow and other branches of the subject on which chemistry has practically no bearing.
- An idea of how the various subjects are treated can best be conveyed, perhaps, by giving the names of those who delivered the lectures, since most of them and their style of writing are well known. These included the editor, who is a professor of chemistry and director of the laboratory at the College of the City of New York; Professor W. P. Mason, of Rensselaer Polytechnic Institute; Mr. A. D. Fling, engineer of the Board of Water Supply; Dr. T. C. Darlington, ex-Commissioner of Health of New York City; Mr. H. W. Wiley, Chief of the Bureau of Chemistry of the U. S. Government; Mr. W. A. Hamor, Research Assistant to Professor of Chemistry, College of the City of New York; Mr. Virgil Coblenz, Professor of Chemistry, Columbia University; Dr. L. F. Kebler, Chief, Division of Drugs, U. S. Bureau of Chemistry; Mr. A. S. Cushman, Acting Director, Office of Roads, U. S. Department of Agriculture; Mr. W. H. Edwards, Commissioner of Street Cleaning, New York City; Mr. E. S. Very, Sanitary Engineer, Department of Street Cleaning, New York City; Prof. C. E. A. Winslow, of the Massachusetts Institute of Technology and the College of the City of New York; Mr. A. H. Elliott, Engineer Chemist to the New York Consolidated Gas Company; Dr. F. B. Parsons, formerly of the Metropolitan Sewerage Commission of New York City; Mr. H. R. Moody, Associate Professor of Chemistry, College of the City of New York; Prof. T. A. Storey, Director Department of Physical Instruction and Hygiene, College of the City of New York; Prof. L. A. Olney, Professor of Chemistry and Dyeing, Lowell Textile School, Lowell, Mass.; Mr. A. A. Breneman, expert member Municipal Explosives Commission, New York City; Mr. Maximilian Tech, paint expert, and Mr. N. L. Britton, Director of the Botanical Gardens, Bronx Park, N. Y.
- The book is profusely illustrated and has an extensive index.



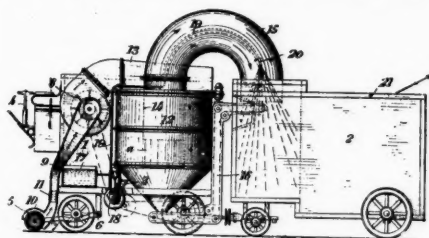
# PATENT CLAIMS

**983,268. FIRE-HYDRANT.** William W. Corey, St. Louis, Mo. Serial No. 573,795.  
In a hydrant, the combination with a stand pipe having a main valve, of a sectional valve operating rod, a sleeve which



receives the adjacent ends of two of the sections of the valve operating rod, and a longitudinally adjustable member within said sleeve and forming a connection between the sections of the valve operating rod.

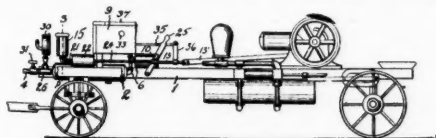
**983,293. STREET-DUST-REMOVING MACHINE.** Arnold Kündig-Honegger, Zurich, Switzerland. Serial No. 320,778.  
In a machine of the character described the combination with a suction conduit, of a separating chamber communicating therewith provided with a discharge orifice in its bottom, a dust removing conduit hav-



ing its receiving end inside the chamber near the orifice and its discharge end extending out of the chamber, a conveyor beneath the orifice extending to a point near the discharge end of the conduit, and a moistening device in the latter near its discharge end.

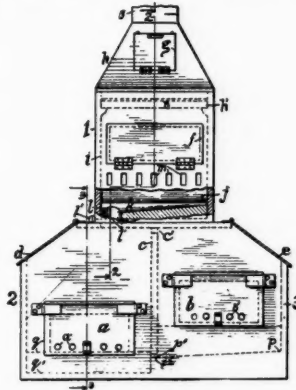
**984,231. CHEMICAL FIRE-ENGINE.** Henry M. Minnis, Wylie, Tex., assignor to Samuel Potts and C. D. Love, Wylie, Tex. Serial No. 560,782.

In a chemical fire-engine, the combination with a frame, of a charging tank mounted on the frame and provided with an outlet, a receptacle for receiving soda water mounted adjacent the tank, a pump cylinder interposed between the tank and receptacle, a pipe connection from the tank to the receptacle to which the cylinder is also connected, a pair of check valves in the pipe connection, a valve being located on each side of the point of connection with cylinder, an acid receptacle, a



hand operated pump interposed between the acid receptacle and the tank, a pipe connecting the said acid receptacle with the tank and to which the hand pump is also connected, a pair of check valves in the last named pipe, a valve being disposed on each side of the point of connection to the hand pump, a piston working in the first named pump cylinder, a swinging agitator operating in the soda water receptacle, and an operating connection between the piston and the agitator.

**983,765. GARBAGE-CREMATORY.** Chas. A. Raggio, Chicago, Ill., assignor of one-half to Louis G. Raggio, Chicago, Ill. Serial No. 466,302.  
In combination with garbage and ash receptacles, a rubbish furnace on said receptacles, said rubbish furnace provided with a floor having therein a draft open-



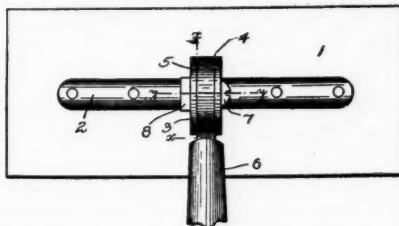
ing and means for air draft above said floor, the rubbish furnace being in communication with the ash receptacle through the aforementioned draft opening whereby a draft will be created by the rubbish furnace through said draft opening to carry off foul odors from the ash receptacle, substantially as described.

**984,543. COMPOUND FOR FORMING PAVING.** David Crockett, Birmingham, Ala. Serial No. 565,024.

A compound, comprising tar, lime, sand, cracked stone and acetic acid in the proportion specified and commingled in the manner set forth.

**985,074. TOOL FOR CEMENT WORK.** Ralph L. Sohn, Arrowsmith, Ill., assignor of one-third to Henry M. Scott and one third to Walter A. Scott, Arrowsmith, Ill. Serial No. 553,863.

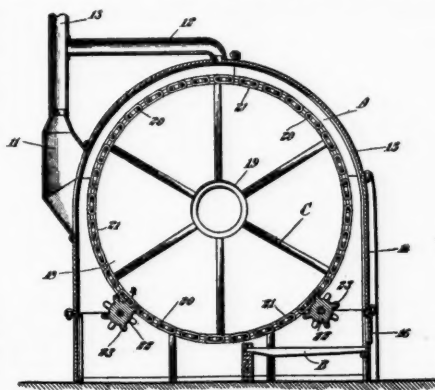
The combination, with a tool of the character described, having a bifurcated post, of a handle provided with a radially slotted disk at its end fitting the bifurcation in said post, said slot being accurate



and having a more decided turn at its inner extremity forming a shoulder for the purpose specified, and a bolt passed through said post and engaging the slot in said disk for clamping the latter in the post.

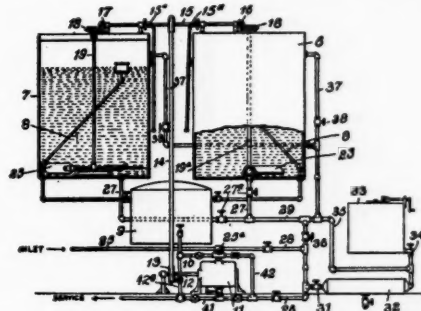
**984,646. INCINERATOR.** Pierre Isidore Bois, Ottawa, Ontario, Canada. Serial No. 542,614.

An incinerator comprising in combination a drum formed with frusto conical side members connected at the periphery by transverse cross-bars and chain links connecting the cross-bars, a casing inclosing the drum having a flue leading



therefrom, a cylindrical member journaled in the casing and being adapted to support the drum and having teeth entering the spaces between the links, means for driving said cylindrical member and a grate in the casing beneath the drum.

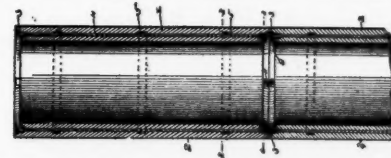
**984,635. WATER-PURIFYING APPARATUS.** Edwin S. Woods, Chicago, Ill., and John C. W. Greth, Pittsburg, Pa., assignors to Wm. B. Scaife & Sons Company, Pittsburg, Pa., a Corporation of New Jersey. Serial No. 414,266.  
The combination in a water-purifying system of a plurality of treatment tanks, a stirring device in each tank, a water



motor connected in the outlet line from all said tanks, a water inlet pipe having also a connection to said motor, and connections from the motor to the stirring devices whereby the latter may be continuously operated, the motor being driven either by incoming or outflowing water.

**984,847. SOLID-JOINT, CEMENT, REINFORCED PIPE.** Craig Poling, Nebraska City, Neb., assignor of one-half to Frank M. Neville. Serial No. 544,750.

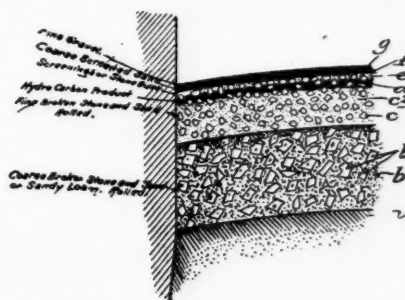
In a cement pipe of the kind described, comprising pipe sections joined together, each of said sections provided with longitudinal strips, each pipe section provided with a concavity in each of its ends, each metallic strip having its ends protruding into its respective concavity, a longitudi-



dinal perforation provided in each of the ends of each strip, an inwardly projecting lug provided with a key received by each longitudinal perforation in each strip, said lugs having their faces parallel to each other when in normal position, each of said lugs provided with a corresponding perforation, means comprising a nut and bolt connection to connect the lugs of the meeting ends of each two corresponding strips in the adjacent pipe sections, the bolt of said nut and bolt connection passing through the perforations in each two corresponding lugs.

**984,801. METHOD OF MAKING PAVEMENTS.** Cloyd Davis, Mineola, N. Y. Serial No. 545,388.

The herein described method of making pavements consisting of first providing a road bed, covering the same with a layer of broken stone, filling said layer of broken stone with sand or sandy loam, rolling the surface thus produced, covering said surface with another layer of broken stone, the stone being of less dimensions than those of the first layer, filling in said layer with sand to within a predetermined point of the top thereof and rolling the same, then placing thereon a layer consisting of a hydrocarbon product, the thickness of which is not sufficient to thoroughly



cover the last layer of stone, then covering the said last layer of stone and the layer consisting of a hydrocarbon product with screenings or stone dust, sufficient to cover the broken stone, then covering the screenings or stone dust with a thin layer of coarse screened sand, then brooming until the screenings and sand are thoroughly mixed and then rolling the surface thus produced.

## THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Ohio	Cincinnati	Mar. 10, noon	Building culvert	J. H. Sundmaker, Dir. Pub. Serv.
Indiana	LaFayette	Mar. 10, 10 a.m.	Constructing gravel road	Geo. W. Baxter, Auditor.
New York	Buffalo	Mar. 10, 11 a.m.	Paving and repaving various streets	Francis G. Ward, Commissioner.
New York	New York	Mar. 10, 2 p.m.	Regulating and repaving portions of various streets	Geo. McAneny, Boro. President.
Washington	Spokane	Mar. 10, 2 p.m.	Grading, curbing, parking and sidewalk. West Grove Addition	J. C. Argall, Secy. Bd. Pub. Works.
Michigan	Bay City	Mar. 11	Furnishing crossties blocks, plank etc.	J. H. Bloomfield, County Engr.
Indiana	Muncie	Mar. 11	Paving various streets	J. Kelly, City Clerk.
Indiana	Brazil	Mar. 11, 11:30 a.m.	Constructing 7,655 ft. of gravel road; 10,000 ft. limestone road	W. E. Staggs, County Auditor.
Ohio	Bowling Green	Mar. 13	Constructing stone road	Wood County Commissioners.
Pennsylvania	Youngwood	Mar. 13	Paving about 2 miles of street with brick blocks	Warren Mitchell Greensburg, Bor. E.
Minnesota	Worthington	Mar. 13, 2 p.m.	Grade approx. 10,066 yards of streets	E. C. Pannell, Co. Aud.
Kansas	Fort Scott	Mar. 13, 5 p.m.	Grading and macadamizing portion of First street	J. O. Brown, City Clerk.
Kansas	Topeka	Mar. 13, 2:30 p.m.	Paving 21 blocks with vitrified brick, necessary storm sew. &c.	C. B. Burge, City Clerk.
Ohio	Youngstown	Mar. 13, 1:30 p.m.	Improving various roads	Frank Agnew, Secy.
Indiana	Lebanon	Mar. 13, 7:30 p.m.	Grading, graveling and sewerage Baronne Street	Edmon Connor, City Clerk.
New York	Brooklyn	Mar. 13, 11 a.m.	Curbing, paving, grading etc., several streets	Lawrence Gresser, Boro. President.
Tennessee	Memphis	Mar. 14, noon	Paving about 8,500 sq. yds. with vitrified brick; about 80,000 sq. yds. with tar macadam and 10,000 sq. yds. with wood blks	J. H. Weatherford, City Engineer.
Indiana	Indianapolis	Mar. 14	Furnishing 5-ton road roller for asphalt plant	Christian Schrader, Pres. Bd. P. Wks.
Iowa	Red Oak	Mar. 15, 10 a.m.	Grading approximately 6,000 cu. yds.; 25,411 yds. brick paving; 3,312 yds. concrete paving	Richard Roberts, City Clerk.
Pennsylvania	Meadville	Mar. 15, 8 p.m.	Grading, curbing and paving portion of Market Alley	Fred C. Kribort, City Clerk.
Alberta, Can.	Calgary	Mar. 15, noon	Constructing concrete sidewalks	W. D. Spence, City Clerk.
Washington	Olympia	Mar. 15, 2 p.m.	Grad., drain, and pave with asphaltic mac. por. of State Aid Rd	Henry L. Bowlby, Secy. Hwy. Bd.
Kansas	Topeka	Mar. 16, 2:30 p.m.	Paving 20 blocks with vitrified brick, nec. stm. sew., &c.	C. B. Burge, City Clerk.
New Jersey	Jersey City	Mar. 16, 3:30 p.m.	Reconstructing certain sections of Hudson Boulevard	J. C. Sweeney, Clk. Blvd. C. H. Co.
Indiana	Paoli	Mar. 17, 2 p.m.	Constructing gravel road	A. B. Ham, County Auditor.
Ohio	Cincinnati	Mar. 17, noon	Improving portion of Third Avenue	Stanley Struble, Pres. Bd. Comrs.
Ontario, Can.	Oshawa	Mar. 18	Constructing 4,300 lin. ft. asphalt block pave. on two streets	Frank Chappell, Town Engr.
Indiana	Anderson	Mar. 20, 10 a.m.	Constructing various County roads of gravel	Wm. T. Richards, County Auditor.
Virginia	Portsmouth	Mar. 20, noon	Paving various streets	L. P. Slater, City Clerk.
Indiana	Greenfield	Mar. 20, 10 a.m.	Grad. gravel road in Sugar Creek	C. H. Troy, County Auditor.
Kansas	Topeka	Mar. 20, 2:30 p.m.	Grading 11 blocks, cement curb and gutter	C. B. Burge, City Clerk.
New York	Albany	Mar. 20, 22, 24	Building state roads, 66 pieces	State Highway Commission.
Virginia	Newport News	Mar. 20, noon	Constructing concrete curb and gutter	George E. Via, Chm., Com. on Highways and Sewers.
Virginia	Fort Monroe	Mar. 21, 10 a.m.	Constructing macadam walks and roads	Capt. R. B. McBride, Con. Q. M. U. S. A.
Ohio	Cincinnati	Mar. 24, noon	Improving Broadwell road	Stanley Struble, Pres. Co. Comrs.
Wisconsin	Racine	Mar. 25, 10 a.m.	Paving and grading various streets	P. H. Connolly, Chm. Bd. P. Wks.
Ohio	Cleveland Hgts.	Mar. 28	Improving Berkshire Road	H. H. Canfield, 309 Beckman Bldg., Cleveland, Village Clerk.
Indiana	Logansport	Apr. 1	Constructing 50,000 sq. yds. of sheet asphalt	William Pickett, City Clerk.
Washington	Coupeville	Apr. 5	Improving Hinman Road No. 32	H. T. Wanamaker, Aud. Island Co.
Maryland	Cambridge	Apr. 6, 11 a.m.	Grading, paving and curbing various streets	Henry Lloyd, Chm. St. Imp. Comn.
<b>SEWERAGE</b>				
Oregon	Silverton	Mar. 10	Constructing sewer system	City Clerk.
Wisconsin	Racine	Mar. 11, 10 a.m.	Constructing sewers and appur. in various streets	P. H. Connolly, Chm. Bd. Pub. Wks.
Nebraska	University Place	Mar. 11, 7 p.m.	Constructing lateral sewers in Districts 21-22	C. C. Gates, City Clerk.
Pennsylvania	Glassport	Mar. 13, 8 p.m.	Constructing sewers in various streets	M. E. Randall, Boro. Secy.
Georgia	Atlanta	Mar. 14	Constr. intercepting sewer and disp. plant	R. M. Clayton, Com. Pub. Wks.
Colorado	Fort Logan	Mar. 14, 10 a.m.	Constructing sewage disposal plant	Capt. Chase Doster, Con. Q. M. U. S. A.
Ontario, Can.	Toronto	Mar. 14	Furnishing concrete pipe for main drainage	G. R. Geary, Mayor.
Florida	Jacksonville	Mar. 15, 3 p.m.	Constructing sewers and drains	R. N. Ellis, Supt.
Texas	Cameron	Mar. 15	Constructing sewer system	D. L. Wilson, City Secretary.
Maryland	Baltimore	Mar. 15, 11 a.m.	Constructing storm drains	J. Sewall Thomas, City Registrar.
Pennsylvania	Williamsport	Mar. 17, noon	Building sewer in East End; Penn St. and Graffius run route	John B. Otto, City Engr.
Maryland	Ft. Washington	Mar. 20, 1:30 p.m.	Constructing sewer outlet and outfall	Capt. R. B. Kelton, C. Q. M. U. S. A.
Connecticut	Stamford	Mar. 20, 8 p.m.	Constructing various sewers	Jos. H. Provost, City Clerk.
Ohio	Grandview Hgts	Mar. 21	Constructing sewer and outlet	John Hinterschied, Village Clk.
West Virginia	Moundsville	Mar. 21, 10 a.m.	Constructing 26 miles of sewers	Oscar B. Bonar, City Clerk.
Ohio	Columbus	Mar. 21	Constructing sewer and outlet at Grand View	John Hinterschied, Clerk.
California	San Jose	July 3	Construct septic tank for County hospital	City Clerk.
<b>WATER SUPPLY</b>				
South Dakota	Vermillion	Mar. 10, 2 p.m.	Drilling Artesian well	Irwin D. Aldrich, Secy. Re. Educa.
New Jersey	Spring Lake	Mar. 10, 2 p.m.	Furn. and install artesian water works plant	E. V. Patterson, Boro. Clerk.
Kentucky	Owensboro	Mar. 10, noon	Constructing water softening plant	E. B. Anderson, Chm. Elec. Lt. Com.
Massachusetts	Ft. Andrews	Mar. 10	Extending water mains and changing sewers	Ct. A. M. Miller, 263 Sumner st. Bos.
Iowa	Adair	Mar. 10, 10 a.m.	Bldg. wtr. & light. system, W. K. Palmer Co., K. C., Mo., Engrs.	S. H. Wark, Mayor.
Oregon	Silverton	Mar. 10	Constructing water system	City Clerk.
Ohio	Zanesville	Mar. 10	Furnish. 4,100 ft. 16, 10, 8 and 6-in. water pipe and specials	M. L. J. Logsdon, Secy. B. P. Serv.
W. Virginia	Wheeling	Mar. 11, 9 a.m.	Erection of pump house and foundations for tanks	D. G. Brown, Clk. Bd. Control.
Ohio	Troy	Mar. 11, 10 a.m.	Constructing water mains	A. E. Sinks, County Auditor.
South Dakota	Pierpont	Mar. 12	Furnishing cast-iron pipe, hydrants and fittings	City Clerk.
Pennsylvania	Pittsburg	Mar. 13, 10 a.m.	Constructing pumping station building and appurtenances	City Comptroller.
Ohio	Canton	Mar. 13, 10 a.m.	Furnishing water piping	J. H. McConnell, Auditor.
North Carolina	Jonesboro	Mar. 13	Constructing water works	D. H. Arnold, Mayor.
Ohio	New Lexington	Mar. 13	Constructing water works system	City Clerk.
Ohio	Cincinnati	Mar. 13	Laying water pipe, special castings, etc.	John A. Wenner, Dir. Pub. Serv.
Ohio	Lexington	Mar. 13	Receiving bids for 10-year franchise to install water works	City Clerk.
Texas	Jacksboro	Mar. 15, 2 p.m.	Constructing system of water works	H. C. McClure, Mayor.
Alberta, Can.	Gleichen	Mar. 16	Drilling well; furnishing cast-iron pipe, etc.; erecting steel tank; supplying manhole castings	B. S. Corey, Secretary-Treasurer.
New York	Troy	Mar. 16	Constructing reservoir and spillway	Eugene S. Osborne, Supt. W. Wks.
New Mexico	Fort Bayard	Mar. 18, 11 a.m.	Furnishing motor driven submerged type centrifugal or impeller type pump capacity 200 gals a minute	J. R. McAndrews, Con. Q. M. U. S. A.
Wisconsin	Watertown	Mar. 18, 7 p.m.	Laying c. i. pipe and spec. and construct. manholes for w. wks.	Wm. F. Voss, Secy. Bd. W. Comrs.
Pennsylvania	Bristol	Mar. 20	Constructing water works and filtration plant	Jos. R. Grundy, Chm. Com.
Ohio	Fernbank	Mar. 20, noon	Furnishing water pipe and special castings	W. Ellwood, Wynn, Clerk.
South Dakota	Gettysburg	Mar. 20	Constructing water works	F. M. Wright, City Auditor.
New York	Westbury	Mar. 20	Constructing water works	Thos. J. McCord, Chm. B. W. Comrs.



## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>WATER SUPPLY (Continued)</b>				
Manitoba, Can.	Souris	Mar. 20	Laying about 31,500 ft. standard c. i. water pipe and similar amount vit. sewer pipe; construct. building, furn. pumps, machinery etc.	V. H. Williams, Town Engr.
New York	New York	Mar. 21, 11 a.m.	Constructing drainage equipment for underwatering the shafts and tunnel of the Roundout siphon of the Catskill Aqueduct	Chas. Straus, Pres. Bd. Water Sup. Mayor.
Texas	San Augustine	Mar. 21	Furnishing mat. for construction of w. w. system	P. W. Guiney, Con. Q.M. U.S.A.
Texas	Ft. Sam Houston	Mar. 21, 11 a.m.	Furnishing compound or triple expansion pumping engine capacity 1,000,000 gals in 24 hours.	John Hinterschied, Clerk.
Ohio	Columbus	Mar. 21	Laying water mains and water pipes at Grand View	W. A. Clement, City Engineer.
British Col, Can	Vancouver	Mar. 22	Furnishing water pipe, fire hydrants and pig lead.	J. W. Sanderson, Treas.
Indiana	Nat. Mil. Home	Mar. 25	Install. mach. for imp. water sup. at Marion Bch., N.H.D.V.S.	H. H. Canfield, 309 Beckman Bldg., Cleveland, Village Clerk.
Ohio	Col'bus Heights	Mar. 28	Constructing water mains	H. Z. Walpole, Secy. Water Co
Pennsylvania	West Telford	April 1	Constr. water works; approx. cost \$30,000	A. T. Dickey, City Engineer.
Texas	Galveston	Apr. 3, noon	Installing 10,766 lin. ft. of water main	J. B. Mace, Pres. Bd. Water Comrs.
New York	Keesville	Apr. 5	Constructing reservoir, laying water pipe, etc.	Capt. Jos. F. Gohn, Con. Q.M. U.S.A.
Maine	Ft. McKinley	Apr. 15	Constructing chemical water softening plant	
<b>BRIDGES</b>				
Colorado	Trinidad	Mar. 10, 2 p.m.	Constructing concrete or steel bridge	G. F. Harlan, Chm. Bd. Co. Comrs.
Ohio	Hamilton	Mar. 11, 10 a.m.	Construction of bridge and road fill	J. E. Brate, County Auditor.
Kansas	Lawrence	Mar. 11, noon	Constructing 70 ft. bridge and furnishing extra beams	W. R. Green, Co. Clerk.
Indiana	Winchester	Mar. 11, 10 a.m.	Constructing twelve concrete and steel bridges	H. F. Wood, County Auditor.
Nebraska	Grand Island	Mar. 14	Constructing and repairing bridges for one year	G. E. Neumann, Co. Clk.
Michigan	Ypsilanti	Mar. 15	Constructing single span reinforced concrete bridge	Frank Joslin, City Clerk.
Wisconsin	Oakwood	Mar. 15, 2 p.m.	Constructing reinforced concrete one beam bridge	John A. Davitz, Town Clerk.
Iowa	Cedar Rapids	Mar. 15, 10 a.m.	Constructing 6-span bridge on Third Ave. and re-erection of bridge on Eighth Ave.	L. J. Storey, City Clerk.
Pennsylvania	Chambersburg	Mar. 15, 5 p.m.	Constructing concrete bridge and concrete culvert	Wm. A. Laird, Jr., Boro. Clerk.
New York	Ellicott	Mar. 15, 2 p.m.	Constructing various bridges	Samuel Ely, Town Supt.
Pennsylvania	York	Mar. 16	Constructing concrete bridge	County Commissioners.
Nebraska	Benkelman	Mar. 20	Constructing wooden wagon bridge	Dund County Commissioners.
Indiana	Greenfield	Mar. 20, 10 a.m.	Constructing four bridges	C. H. Troy, County Auditor.
Ohio	Cambridge	Mar. 21, noon	Building two stone piers and stone abutments for bridge	W. D. Deselm, County Auditor.
Ohio	Coshocton	Mar. 21, 10 a.m.	Constructing bridge; repairing and painting bridge	Frank Mowrey, County Auditor.
Ohio	Cleveland	Mar. 22, 11 a.m.	Bridge and road work	John F. Goldenbogen, Clk. Comrs.
Ohio	Cincinnati	Mar. 24, noon	Constructing concrete bridge	Stanley Struble, Pres. Co. Comrs.
Kansas	Hill City	Apr. 4, noon	Constructing bridge	Ben. S. Smith, Co. Clerk.
<b>LIGHTING AND POWER</b>				
Iowa	Adair	Mar. 10, 10 a.m.	Bldg. light. & wtr. system; W. K. Palmer Co., K. C., Mo., Engrs.	S. H. Wark, Mayor.
Pennsylvania	Etna	Mar. 13, 5 p.m.	Constructing light plant	J. C. Armstrong, Boro. Clerk.
Arkansas	Monticello	Mar. 15, 3 p.m.	Constructing electric light plant	N. C. Roe, Chairman.
Iowa	Webster City	Mar. 21	Constructing electric light and power plant	City Clerk.
Indiana	Columbia City	Mar. 25	Furnishing machinery for electric light plant	City Clerk.
Alberta, Can.	Calgary	Mar. 22, noon	Furnishing one 1,500 KW. turbo-generator with condensor; three 1,000 KVA single transf. 12,000 to 2,300 volts with switch gear etc.	W. D. Spense, City Clerk.
Indiana	Columbia City	Mar. 27	Furnishing day current for power purposes	City Clerk.
<b>FIRE EQUIPMENT</b>				
New York	New York	Mar. 13, 10:30 a.m.	Furnishing 150 fire alarm boxes; 100 iron shells for fire alarm boxes and 200 keyless doors	R. Waldo, Fire Comr.
Ontario, Can.	Ottawa	Mar. 14, noon	Furn. comb. automobile fire engine of pump. capacity of 700 to 800 gallons a minute.	John Henderson, City Clerk.
New Jersey	Jersey City	Mar. 16, 8 p.m.	General alteration of 2 engine houses and a school house	Board of Fire Commissioners.
New Jersey	Princeton	July 5	Furn. auto pump. engine	E. M. Updike, Chm. F. & W. Com.
<b>MISCELLANEOUS</b>				
Massachusetts	Holyoke	Mar. 10, 2 p.m.	Receiving proposals for collection and disposal of garbage	Oscar C. Ferry, Asst. Clk. Bd. P. W.
Minnesota	Mankato	Mar. 13, 10 a.m.	Furnishing 2 street sprinklers	A. H. Scherer, City Clerk.
Pennsylvania	McKees Rocks	Mar. 13	Constructing garbage disposal plant	City Clerk.
New York	New York	Mar. 13, 2:30 p.m.	Repairing freight dock at Randall's Island	Michael J. Drummond, Comr.
Nebraska	Madison	Mar. 14, noon	Erecting brick addition to county jail	S. R. McFarland, Co. Clk.
Massachusetts	Ft. Andrews	Mar. 15, 1 p.m.	Constructing, plumbing wiring &c. one fire station	Capt. A. M. Miller, Con. Q.M., U.S.A.
Washington	Spokane	Mar. 17, 2 p.m.	Furnishing 5-passenger automobile	John Gifford, City Purchasing Agt.
New York	Troy	Mar. 29	Erecting county jail	The Rensselaer County Jail Comn.

## STREET IMPROVEMENTS

**Fairfield, Cal.**—Trustees are planning to macadamize eight blocks of street in business section during coming spring.

**Hermosa Beach, Cal.**—Bids will soon be received for paving of about six streets with asphalt at cost of \$60,000.

**Oroville, Cal.**—Supervisors have ordered construction of road near Swede's Flat.

**Trinidad, Col.**—Council is considering establishment of Nevada ave. and Animas st. Paving District No. 8.

**Jacksonville, Fla.**—City Engineer Predleau has submitted estimates for paving Riverside ave., Roselle to King sts., with asphalt blocks; estimate will be prepared for paving Riverside ave., King st. to city limits, with asphalt macadam.

**Post Falls, Ida.**—Hauser Lake Booster Club has decided to build auto road from Hauser Lake to Newman Lake, distance of 1½ miles.

**Bloomington, Ill.**—City is considering brick paving on Evans st., South Center.—Elmer Folsom, City Engineer.

**Silvis, Ill.**—Village Board has passed ordinance providing for pavement of First ave. with sandstone curbing and best vitrified paving brick; plans also include a system of storm drains; estimated cost, \$61,685.

**Springfield, Ill.**—City will construct 6 blocks of brick paving on Pasfield st., also on 14th st.; will soon let contract for brick paving on Laurel st.—Frank H. Hamilton, City Engineer.

**Sterling, Ill.**—Road Commissioner Thomas McCue is securing estimates of the cost of paving portion Galt road.

**Sterling, Ill.**—Board of Local Improvements will secure estimate of cost of paving W. 10th st., from Locust st. to Ave G, with either asphalt, creosote block or brick.

**Boonville, Ind.**—Bids will soon be received by Bd. of Commissioners, Warrick County, for gravel road improvements.—N. M. Spradley, County Auditor.

**Elkhart, Ind.**—Board of Public Works is receiving bids for paving portions of four streets with asphalt, brick, wooden block or bitulithic, laid on a 6-in. gravel or broken stone foundation.

**Mt. Vernon, Ind.**—Bids will soon be received by Board of Commissioners, Posey County, for 22 miles of gravel road improvements.—Paul Maier, County Auditor; T. J. Johnson, Engineer.

**Villisca, Ia.**—Council has decided to lay 16,505 sq. yds. brick paving, 4,953 lin. ft. combined curb and gutter, and 1,195 lin. ft. of curb.—Geo. B. Sexton, City Clerk; Theo. S. Delay, Creston, Engineer.

**Newport, Ky.**—Mayor Craig has recommended resurfacing of asphalt streets.

**Shelbyville, Ky.**—Mayor Gruber has recommended street paving work at cost of \$30,000.

**Shreveport, La.**—Citizens will vote Apr. 4 on \$250,000 paving bonds.

**Baltimore, Md.**—Bids will be readvertised by Park Board for paving walks in public parks with vit. brick.

**Baltimore, Md.**—Plans have been approved for widening Belair road from North

ave. to the city limits, at estimated cost of \$70,000; plans have been prepared for constructing section of boulevard between Druid Hill and Gwynn Falls Park, at cost of \$80,000.—James H. Smith, President Commissioners for Opening Streets.

**Haverhill, Mass.**—Council is considering order for \$75,000 bond issue for permanent street and sidewalk work.

**Haverhill, Mass.**—Boulevard to extend from State highway, near the Haverhill-Lawrence line and thence along river to sea, is proposed by Municipal Council.

**New Bedford, Mass.**—Blodgett & Co. have secured \$186,000 bond issue; \$150,000 will be used for block paved streets and \$20,000 for additions to city stables.

**Pittsfield, Mass.**—Board of Public Works has recommended paving of Columbus ave. and other streets; also macadam on Waconah st.

**Worcester, Mass.**—Olmstead Bros., Boston, have prepared plans of beautifying Washington square.

**Detroit, Mich.**—Bids are being received for paving Colbourn, Forsyth, McDougal, Stanley and Superior sts. with cedar block, and Third, Palmer and Winford aves. with sheet asphalt; Department of Public Works has been directed to ask bids for paving with cedar block on concrete foundation, using Medina, Berea or other approved curbing, Spruce st., 26 ft. wide, Wabash ave. to 12th st., at estimated cost of \$4,920, and Hazel st., 24 ft. wide, Wabash to National ave., \$8,736; Montclair ave., \$7,920, and Chalmers ave., \$8,496.—J. J. Haarer, Commissioner.

**Ludington, Mich.**—All bids received on Feb. 20 for constructing pavements have been rejected; new bids will be asked.—Dean Thompson, City Clerk.

**St. Paul, Minn.**—County Commissioners will readvertise for bids for road rollers with double-speed engines.—P. J. Ryan, Assistant County Attorney.

**Kansas City, Mo.**—Bids will soon be received by Board of Public Works for 32 blocks of asphalt paving on 15th st.—L. R. Ash, City Engineer.

**St. Louis, Mo.**—Widening of Washington ave. is being considered by Council.

**Omaha, Neb.**—City will soon let contracts for nearly \$500,000 worth of street paving and curbing.

**Haddon Heights, N. J.**—Citizens have voted \$60,000 bonds to macadamize streets.

**Jamesburg, N. J.**—Board of County Freeholders will ask for new bids for building retaining wall at this place.

**Morristown, N. J.**—Paving of Speedwell ave. and Morris st. will be considered. A. S. Pierson, Mayor.

**New Brunswick, N. J.**—Board of County Freeholders has adopted resolution for repairing South River and Cranbury turnpike roads.

**Binghamton, N. Y.**—Following towns considering the purchase of road machinery: Sanford, Windsor, Fenton, Colesville, Union and Vestal.

**Fort Plain, N. Y.**—Town Board of Minden has voted to appropriate \$6,176.15 for highways in town during present year.

**New Rochelle, N. Y.**—Widening of North ave., Grand st. to Winyan ave., at cost of \$60,000, is being considered.

**North Hempstead, L. I., N. Y.**—Board of Supervisors of Nassau County has authorized North Hempstead to issue \$46,500 bonds for road improvements.

**Poughkeepsie, N. Y.**—Board of Public Works is planning to improve Jefferson st.; has decided to macadamize portion of Church st.

**Rochester, N. Y.**—Bids will be asked by Board of Contract and Supply for building macadam roadway and cement sidewalks at Exposition Park.

**Seneca, N. Y.**—Village Trustees will receive bids Mar. 15 for \$40,000 paving bonds; State is ready to ask bids on contract.

**Utica, N. Y.**—Board of Contract and Supply is considering plans for paving Hickory, Knox, North Genesee, Kirkland and Mary streets, Humbert avenue and Young place.

**Charlotte, N. C.**—Citizens will vote on \$150,000 bonds for street improvements and extensions.

**Wadesboro, N. C.**—Anson County will vote on \$300,000 of bonds for road construction.

**Whiteville, N. C.**—Bids will be received Mar. 20 for \$10,000 street improvement bonds.—W. Ross Davis, Mayor.

**Cincinnati, O.**—City Engineer Shipley has estimated cost of paving Knowlton street with brick at \$16,142.60 and Mozart avenue with brick at \$15,391.65.

**Cincinnati, O.**—City Engineer Shipley has submitted a recommendation to Director Sundmaker advising that supplementary contract be entered into in connection with improvement of Young st. for building of retaining walls; estimated cost \$3,465.

**Lima, O.**—Plans are being prepared by City Engineer A. L. Metheany for 10,000 sq. yds. of macadam pavement, with curbing and catch basins; will be ready for bids in about six weeks.

**Portsmouth, O.**—Council has passed an ordinance for grading, curbing, paving and improving Adams st., 5th to 8th st.—Wm. N. Gableman, Clerk.

**Sandusky, O.**—Council is considering construction of retaining walls at foot of Jackson road and Wayne st.

**Toledo, O.**—Bids will be received by Board of Public Service for paving 13 streets, in all 31,200 sq. yds. brick, 31,000 sq. yds. asphalt or creosoted wood, 4,000 sq. yds. macadam.—Geo. Tonson, Chief Engineer.

**Prineville, Ore.**—Council is planning grading and improvement of number of streets.

**Du Bois, Pa.**—Village is considering paving of several streets.

**Greenville, S. C.**—Greenville County will pave Buncombe road to Five Mile Post.—J. P. Goodwin, Supervisor.

**Cookeville, Tenn.**—Putnam County has voted \$100,000 pike bonds.

**Crockett, Tex.**—Houston County will vote Mar. 25 on \$150,000 bonds for construction of roads in Dist. No. 3.

**Dallas, Tex.**—Specifications have been approved and bids will be asked for paving portion of 16 streets.

**Galveston, Tex.**—Board of County Commissioners will advertise for bids for regrading and shelling of four and one-third miles of road connecting main road with Texas City from Lamarque; also for 3,500 cubic yds. of mudshell with which to repair roads down island between third and seventh mile post; Road Engineer and Road and Bridge Committee will look into

matter of shelling or resurfacing county roadway between causeway and end of Broadway.

**Hempstead, Tex.**—Precinct No. 6, Waller County, will vote Apr. 1 on \$10,000 bonds for road construction.

**Houston, Tex.**—Paving of Chartres st. is being considered.

**Lockhart, Tex.**—Citizens will vote Mar. 30 on \$50,000 bonds to build roads.

**Memphis, Tex.**—Precinct No. 1 will vote on \$25,000 bond issue for good roads.

**Pecos, Tex.**—Reeves County Commissioners have called for bids to construct sidewalks around court house in this city.

**Alexandria, Va.**—Council is considering resolution appropriating \$15,000 to pave Washington st. with vit. brick.

**Roanoke, Va.**—Bids will soon be asked for street paving estimated at \$250,000.—F. L. Gibboney, City Engineer.

**Staunton, Va.**—Board of Supervisors of Augusta County is considering holding of election to bond county for \$1,000,000 for roads.

**Williamsburg, Va.**—James City County Board of Supervisors has appropriated \$1,350 out of county and district road funds as its proportion of cost of the Newport News-Richmond sand and clay road.

**Pasco, Wash.**—Construction of cement sidewalks is being considered; cost, \$40,000.

**Port Townsend, Wash.**—City is considering installation of about 48,000 sq. ft. of concrete sidewalk in residence part of city; cost \$10,000.—W. J. Sadler, City Engineer.

**Seattle, Wash.**—Board of Public Works has received following estimates: Grading 10th ave., \$2,500; filling, plank, etc., Railroad ave. South, \$7,525; concrete walks on Weller st., \$5,500; wooden walks on 5th ave. South, \$10,600.

**Madison, Wis.**—Council has passed resolutions for about six miles of brick and creosote paving, to cost \$200,000.—John F. Icke, City Engineer.

**Montreal, Que., Can.**—Paving of St. Antoine, Dorchester, Notre Dame, Lagache-tiere sts. and Mt. Royal ave. is being considered.

**Sydney, N. S., Can.**—Citizens have voted \$75,000 bonds for permanent street work, curb and gutter, sidewalks and paving.—D. McD. Campbell, City Engineer.

**Victoria, B. C., Can.**—Cost of asphaltting Esquimaux road has been estimated at \$18,346.

## CONTRACTS AWARDED

**Eutaw, Ala.**—Building streets, sidewalks and curbing on four of the principal streets to Tuscaloosa Concrete & Construction Co., about \$12,000.

**Los Angeles, Cal.**—To Paonessa & Taylor, Story Bldg., for grading and constructing sidewalks and curb on Deuger ave., \$8,000.

**Riverside, Cal.**—To Johnson Shea Co. for macadamizing and constructing curbs and gutters on Park ave., \$29,173; other bidders: Shull, Tucker Co., \$29,727; Star Cement Co., \$30,987; E. H. Kellogg, \$31,290.

**Oak Park, Ill.**—Street improvements, as follows: Granite top macadam pavement on Erie st., to Alexander Todd, 514 N. Hamilton ave., \$2,840.20; asphalt concrete pavement and Portland cement granite concrete combined curb and gutter on East ave., to Standard Pavement Co., 145 La Salle st., Chicago, \$8,529.50.

**Maywood, Ill.**—To A. M. Todd for paving portions of N. 6th, 9th and 11th aves. with Bessemer block, \$65,534.

**Franklin, Ind.**—Grading and graveling road between Johnson and Shelby counties, to C. W. Folger & Co., Columbus, \$10,950; other bidders: T. H. Gilbert, Martinsville, \$10,963; R. G. Porter, Edinburg, \$10,962.

**Logansport, Ind.**—Constructing Sheetty road in Jefferson Township, to J. H. Nulls, Winfield, \$6,743.

**Portland, Ind.**—To Daniel Wallace and Levi Schlecty, Ridgeville, to build Richard Cummins gravel road, on Jay and Randolph county line, \$17,749. Other bidders: Sisk & Rupel, \$18,600; Mannix & Hall, \$19,920; Weston Bros., \$21,023.25; Sprinkle & Grif-fith, \$22,600; Fishbaugh, Karsh & Appenzeller, \$22,025; North & Bunman, \$18,960;

**Corning, Ia.**—Bids received Feb. 20 for paving and curbing: Capital City Concrete Construction Co., successful bidder.—Theo. S. Delay, Creston, Engineer.

		Hamilton & Schwartz Shenandoah	Jas. Horabin Des Moines	Evan J. Evans Red Oak	J. W. Turner Imp. Co. Des Moines	Capital City Cons. Co. Springfield, Ill.	Creston Cons. Co. Creston
Brick paving.....	12000 s.y.	\$1.91	\$2.04½	\$2.06	\$2.09½	\$1.93	\$2.07
Comb. Curb & Gutter	2375 l.f.	.79	.95	.99	.86	.69	.97
Gutter laid to old curb	1875 l.f.	.55	.60	.70	.66	.53	.68
Concrete alley paving	189	1.39	1.39	1.63	1.57	1.11	1.54
Extra grading.....	Under 1000 ft.	.44	.45	.49	.40	.43	.50
Overhaul grading....	Over 1000 ft.	.02	.02	.03	.02	.05	.02

Sullivan, Mason & Sullivan, \$19,600; Buckley & Gardner, \$19,801; J. W. Mangus, \$20,987; Teeter & Tetter, \$19,270.

**Hutchinson, Kan.**—Furnishing two cars of Portland cement for pavements, to D. J. Fair Lumber Co.

**Wichita, Kan.**—To John Ritchie & Sons, Topeka, for 25 blocks of brick pavement with cement and asphalt filler, \$1.93 and \$1.83 per sq. yd.; total cost about \$46,000.

**Shebysville, Ky.**—Furnishing 1,000 yds. of crushed stone, to Jas. W. Tucker, of Jefferson County, \$1.10, spread on streets.

**Detroit, Mich.**—Paving Superior st., 3d and Wrexford aves. 26 ft. wide with cedar block on concrete foundation, with Amherst curbing, to Julius Porath, McGraw Bldg., \$30,005, \$4,854 and \$5,889; Columbus pl., Amherst curbing, and Forsyth ave., Berea curbing, to J. A. Mercier, 211 Hammond Bldg., \$9,571 and \$9,792; McDougal ave., Amherst curbing, to T. E. Currie, McGraw Bldg., \$6,657.

**Detroit, Mich.**—By J. J. Haarer, Commissioner Public Works: To C. H. Little & Co., Penobscot Bldg., for all sand required by asphalt plant for the year ending Jan. 31, 1912, 70c. per cu. yd.; to Barber Asphalt Paving Co., for all asphalt required by the asphalt plant, for year ending Jan. 31, 1912, \$21.60 per ton for Trinidad brand and \$29.10 for Bermudez; to R. F. Conway & Co., \$22.60 for Cubanel; to Union Oil Co., \$23.38; for all binder stone for same time, to Fairview Coal and Supply Co., Kercheval and Hart aves.

**Barker, N. Y.**—Furnishing two-cylinder roller, to the Buffalo Traction Company at cost of about \$1,800.

**Maine, N. Y.**—Furnishing Marathon combination roller and engine, at outlay of about \$1,800, to Climax Road Machine Company, of Marathon.

**Mineola, L. I., N. Y.**—Constructing Babylon-Hempstead turnpike and centennial, to Twombly & Elder, Jamaica, \$40,017.

**New Bern, N. C.**—To Georgia Engineering Co., Augusta, Ga., for paving, "Augusta block," \$1.44 with sand filler and \$1.48 with cement filler; East Front st. and a section of Pollock st. will be paved with asphalt.

**Wapakoneta, O.**—Paving Mechanic st., to J. E. Conley & Co., Dayton, \$38,065.65.

**Hillsboro, Tex.**—Paving several streets with Hassam concrete, to Ocklander Bros., \$80,000.

**Seattle, Wash.**—Grading Meridian ave. and N. 78th st., to John Kalberg, 5204 10th ave. N. E., \$8,101.

**Waterville, Wash.**—Construction of nine miles of county road, to J. J. McNeerney, Wenatchee, \$33,000.

**Belleville, Ont., Can.**—To the Schuster Company for supply of 1,000 barrels, more or less, of cement, \$1.57¼ per barrel.

## BIDS RECEIVED

**Cumberland, Md.**—Furnishing and delivering along road to Manantico Bridge as wanted 1,800 tons of gravel: Richard & Craig, Cedarville, work to be completed by July 1 at \$1.22½ per ton; Furman Wallen, to be completed in 65 days from time work began, 88 c. per ton; Sheppard Clark, to be completed by July 1, 74½ c. per ton.

**Boston, Mass.**—Constructing walks at Ft. Andrews, as follows: Thomas Fitzgibbons, \$6,630; C. Bevilacqua, \$7,228; Frank Williams, \$7,263; James H. Fannon, \$7,900; Thomas Whelan & Co., \$8,275; L. C. Carchia, \$8,508; John A. Costello, \$8,719; Antony Cefalo, \$9,700; G. Porter, \$11,500.

**Albany, N. Y.**—Construction of highways adjacent to the Delta Reservoir in Oneida County: James Anderson, Caledonia, N. Y., \$51,037; Theodore C. Hailes, Jr., Albany, N. Y., \$40,834; Cunningham-Woodward Co., Hudson Falls, \$47,712.

**New Bern, N. C.**—Street paving: Warner-Quinland Asphalt Co., Syracuse, N. Y., sheet asphalt on a concrete base, California \$1.60 per sq. yd., Trinidad \$1.65, Bermuda \$1.69, provided they were awarded 30,000 sq. yds; asphalt macadam, California asphalt with a 4-in. concrete base \$1.39 per sq. yd., Trinidad \$1.42, Bermuda \$1.43; Stitzer Engineering and Construction Co.,



Philadelphia, made the following proposition: Mack brick \$1.68 per sq. yd.; bid thrown out because check for \$250 did not accompany the bid; Peters Bros. Paving Co., Dayton, O., sheet asphalt on a concrete base, \$1.43 per sq. yd.; H. S. Hancock, New Bern, made the following bids: Baltimore block, cement filler, \$1.49 per sq. yd., laid flat \$1.39 per sq. yd.; Baltimore paver \$1.42½ for sand filler deduct 6c. per yd.; asphalt macadam \$1.51, Tarvia filled macadam \$1.41; T. J. McGuire, on Porter block, cement filler \$1.72, Peebles \$1.70, Mack \$1.77, Baltimore \$1.55, Baltimore paver \$1.47; same laid flat \$1.42; deduct 6c. if sand filler is used; tarvia macadam \$1.15, asphalt macadam \$1.45, asphalt macadam, Bermuda \$1.35, M. Bermuda \$1.40; Georgia Engineering Co., Augusta, Ga., on Augusta block, sand filler \$1.44, cement filler \$1.48; Bowe & Page, Charleston, S. C., on Baltimore block, sand filler \$1.46½, Peebles \$1.54, Bessemer \$1.59, Mack \$1.59; cement grout and 3½c. per yd.; asphalt macadam \$1.60, Bituma macadam \$1.27, with emulsion surface 89½c.; Bessemer paver 3½-in., sand filler \$1.58, cement 3½c. extra; Atlantic Bitulithic Co., on bitulithic on 4½-in. foundation \$2.06.

Portland, Ore.—Paving East Glisan st. district, embracing several miles of streets in Laurelhurst, which is to be improved with asphalt; Barber Asphalt Paving Co., only bidder, \$163,719; paving of Mason st. district in Albina with bitulithic pavement, Warren Construction Co., lowest bidder, \$107,977; same company submitted a bid for paving the West Park and 9th st. district for \$24,027; paving with bitulithic pavement of the Williams ave. district, Pacific Bridge Co., lowest bidder, \$70,535; same company submitted the lowest bid for paving of 13th st., \$34,327; Pacific Bridge Co. submitted a bid for filling East 2d st. from East Oak to Hawthorne ave., \$46,214; East Morrison st. from Water to Union ave. is to be paved with wooden blocks, Montague O'Reilly Co., lowest bidder, \$24,691; M. J. Conley, to improve the Congress st. district for \$31,786; Swinton district, Kern & Field, lowest bidder, \$31,809; Oregon Independent Paving Co. underbid Barber Asphalt Co. for laying asphalt paving on number of short streets.

## SEWERAGE

Long Beach, Cal.—Plans have been submitted by City Engineer Dewey for complete sewerage of city at following estimated cost: outfall pipe, \$1,022.52; outfall pier and bulkhead, \$2,286.66; weir chamber, \$1,496.55; septic tank, \$29,265.81; twin sewer, Water st. to Ocean Park ave., \$32,421.75; sand trap, \$1,123.30; twin sewer from 2d and 3d sts., alley to 5th st., \$21,916.94; excavation about 5th st., \$108,010.60; manholes and specials, \$79,046.44; laying pipe, \$2,587.39; incidentals, \$44,378.49; engineering, \$3,219; total, \$343,450.18.

Orange, Cal.—City Trustees have rejected all bids for the work on "inside" sewer system; bids were 50 per cent higher than the estimates placed on the work by City Engineer C. L. Bates.

Willows, Cal.—Trustees have decided to divide unsewered part of city into two sections; it is proposed to hold bond elections in these sections to extend sewer system.

Bridgeport, Conn.—Board of Apportionment and Taxation is favorable to \$100,000 bond issue for construction of sewers in accordance with plans as prepared by Rudolph Hering, of New York.

Waterbury, Conn.—City Engineer Cairns has estimated cost of constructing sewer in Myrtle ave. at \$1,300.

Americus, Ga.—Citizens will vote April 4 on \$40,000 bonds for sewerage extension.

Cartersville, Ga.—City is considering election on bonds for construction of sewer system.

Marietta, Ga.—Citizens will vote May 1 on \$15,000 bonds to extend sewer and water mains.

Pelham, Ga.—Citizens will vote on \$25,000 of bonds for improvements of sewer system and for other work.

Dixon, Ill.—City will expend \$3,000 on vit. tile pipe sanitary sewers on Galena ave. and 1st st.

Galva, Ill.—Plans are being prepared by Engineers W. S. Shields Co., 140 Dearborn st., Chicago, for sewage purification plant; cost about \$5,000.

Hillsboro, Ill.—City proposes to pave School st. at cost of \$28,600.—J. A. Tremble, Charleston, Engineer.

Madison, Ill.—City will build a new sewer to river, draining North Venice.

Danville, Ind.—Board of Town Trustees has selected John O. Kain, Danville, and Curtis Gross, Martinsville, to prepare surveys, plans and estimates for sanitary sewer system.

Manning, Ia.—Engineer P. A. Edquist, 852-54 American National Bank Bldg.,

Omaha, Neb., is preparing plans for sanitary sewer system.

Nevada, Ia.—Plans and Specifications are being prepared by Engineer Sam Steigerwald, 327 6th st., Boone, for construction of sanitary sewer and disposal plant; estimated cost \$40,000.

Abilene, Kan.—City Engineer Guy Hall has prepared plans and specifications for construction of a storm sewer of concrete to the river.

Dodge City, Kan.—Citizens have defeated proposition to issue bonds to install sanitary sewer.

Mansfield, La.—Plans are being prepared by C. M. Robinson for construction of sewer system.—W. E. Singleton, City Clerk.

Fitchburg, Mass.—Sewer Commission is preparing for early start on big sewer, which it is estimated will cost about \$1,000,000.

Greenfield, Mass.—Town is considering \$3,000 appropriation to build sewer along Silver st.

Henderson, Minn.—City is considering construction of sewers.

De Soto, Mo.—B. H. Colby, St. Louis, is preparing plans for sewer system.—W. Cunningham, Mayor.

St. Louis, Mo.—Council is considering bill authorizing election on \$2,500,000 bonds to build sewer to carry River des Peres in tunnel under Art Hill in Forest Park.

Unionville, Mo.—Consulting Engineer Hiram Phillips, Third National Bank Bldg., St. Louis, Mo., will prepare plans and estimates for system of sewers; trunk sewer will cost \$20,000 and district sewers, \$40,000.

Warrensburg, Mo.—Council has passed ordinance creating Sewer District No. 1.

Nebraska City, Neb.—Plans and specifications for sanitary sewer have been prepared by City Engineer Chas. A. Shannon; cost about \$80,000.

Omaha, Neb.—City will soon let contracts for \$100,000 worth of brick or concrete main sewers.

Reno, Nev.—City will purchase site for installation of septic tank.

Cliffside, N. J.—Plans have been prepared by McClare & McClare for the construction of sewers estimated to cost \$80,000; work includes main line, laterals and disposal plant; election on proposition will be held.—S. Wood McClare, Mayor.

Ocean City, N. J.—Local sewer company has had plans prepared for installation of sewage disposal plant. R. W. Edwards and W. E. Massey are interested.

Las Vegas, N. M.—Council has decided to install sewer system in certain streets.—Geo. Morrison, Engineer; Chas. Jamme, City Clerk.

Binghamton, N. Y.—City Engineer John A. Giles has made plans and estimates at \$8,500 cost of proposed storm water sewer in First Ward.

Oswego, N. Y.—Assembly Committee on Affairs of City has decided to report favorably on bill providing for building of a sewer system, which was introduced at the suggestion of Mayor John Fitzgibbons.

Charlotte, N. C.—Citizens will vote on \$150,000 bonds for sewerage extensions.

Smithfield, N. C.—Citizens have voted \$55,000 of bonds for construction of sewer system, electric light plant and water works.

Amherst, O.—W. E. Sarver, Canton, is preparing plans for gravity sewers and disposal plant; cost about \$25,000.—C. G. Aschenbach Village Clerk.

Cincinnati, O.—City Engineer Shipley has estimated cost of constructing sewer in Jonathan and Brewster aves. at \$10,750.

Beaver Falls, Pa.—Engineer Leo Hudson, Haverstraw, N. Y., has been selected as Engineer for preliminary work in installation of sewerage system and disposal plant.

Blairsville, Pa.—Edw. J. O'Brien, City Bldg., Latrobe, is preparing comprehensive set of plans for sewerage system and sewage disposal plant.

Grove City, Pa.—Bids will soon be asked for the construction of the proposed sewers; cost about \$15,000.—L. E. Burnside, Borough Engineer.

Nashville, Tenn.—Bids will be received March 22. 3 p. m., for \$500,000 trunk sewer bonds.

Cuero, Tex.—Council is considering installation of \$10,000 sewerage system as proposed by F. R. Perkins.

Dallas, Tex.—Bids will be readvertised for construction of six-story sanitary sewer.

Rockdale, Tex.—Council is ascertaining authority of town to issue bonds for sewerage purposes.

Spokane, Wash.—Plans for Fourth Ward Trunk Sewer No. 4, to cost \$44,115, have been completed to-day by City Engineer Morton Macartney.

Cranbrook, B. C., Can.—Council has voted \$100,000 for installation of a sewerage system; plans will be prepared at once.

Niagara Falls, Ont., Can.—City Engineer Carl Gardner has prepared plans for reinforced concrete tube, into which principal sewers of city will empty; cost, \$75,000.

## CONTRACTS AWARDED

New Britain, Conn.—Furnishing sewer pipe, to City Coal and Wood Co., 79½ per cent off on 10-in. to 24-in. pipe and 80½ per cent off on 8-in. pipe; furnishing about 35 catch basins, to Duplex Mfg. Co., Cleveland, O., \$15, shipped f.o.b. city; manhole covers, to Sessions Foundry Co., \$7.40 delivered on street.

Paris, Ill.—To Frank Payne for furnishing and laying approximately 710 ft. of 36-in. and 3,384 ft. of 60-in. reinforced concrete or brick sewer, with 10 manholes, \$14,080.

Elkhart, Ind.—To F. J. Miller, representing Frank Brumbaugh and J. M. Fishley, for the Morehouse addition sewer, \$5,290.95, and for the Oakland ave. sewer north from Indiana ave. to Harrison st., \$1,490.80.

Mount Vernon, Ia.—Installation of 71-3 miles of sanitary sewers, 6 to 15-in. pipe, with necessary accessories, a septic tank and filter beds, (a) town sewers, (b) outlet sewers, (c) septic tank and dosing chamber, (d) filter beds, to Hanning-Vineyard Co., Evansville, Ind., (a) \$18,818, (b) \$3,288, (c) \$2,634, (d) \$3,851; other bidders: Geo. M. King Construction Co., Des Moines, (a) \$20,935; Independent Construction Co., Davenport, (a) \$23,620, (b) \$3,525, (c) \$3,344, (d) \$3,322; Blackhawk Construction Co., Waterloo, (a) \$23,632; J. C. Griffith & J. F. Whalen, Anamosa, (a) \$24,802, (b) \$3,729, (d) \$3,728; Dearborn & Jackson, Cedar Rapids, (a) \$25,443, (b) \$3,127, (c) \$3,782, (d) \$4,840; Lytle Construction Co., Sioux City, (a) \$25,708, (b) \$3,469, (c) \$3,670, (d) \$3,727; J. W. Turner Improvement Co., Des Moines, (a) \$25,946; John Brogan, Green Bay, Wis., (a) \$26,093, (b) \$4,256, (c) \$3,433, (d) \$2,981; J. R. McCormick, Ft. Dodge, (a) \$26,295, (b) \$4,301, (c) \$3,587, (d) \$3,166; M. A. Camery, Harlan, (a) \$26,550, (b) \$3,500, (c) \$4,257, (d) \$4,785; W. D. Yeager Co., Cedar Rapids, (a) \$27,306, (b) \$3,516, (c) \$3,596, (d) \$3,888; R. C. De la Hunt, Cedar Rapids, (a) \$28,677, (b) \$3,702, (c) \$3,670, (d) \$3,934; C. B. McNamera & Co., Dubuque, (a) \$29,820, (b) \$3,944, (c) \$3,913, (d) \$3,564; Guy E. Smith, Indianola, (a) \$32,098, (b) \$4,069, (c) \$4,114, (d) \$3,463; Thomas Carey & Son, Clinton, (b) \$3,703, (c) \$3,413, (d) \$4,065; W. W. Cooley, Clinton, (b) \$3,838, (c) \$3,554, (d) \$3,525; Engineer's estimate, (a) \$21,987, (b) \$3,588, (c) \$3,046, (d) \$2,956.

Sigourney, Ia.—To Bush & Gray, Joplin, Mo., for constructing septic sewer system, including 49,505 ft. vit. pipe, 3 disposal plants, 41 flush tanks and 111 manholes, about \$39,000.

Baltimore, Md.—Laying trunk sewer on Pratt st., to McCay Engineering Co., \$85,751.73; lateral sewers in District 15, to William McCarthy & Co., \$75,187; water piping and steam heating work at sewerage pumping station will be done by Louis F. Andrea Co., \$3,052.15.

Detroit, Mich.—Building Fairview Station inlet and outlet, to Langley & Jaynes, city, \$19,200; building vit. brick lateral sewers, to T. G. Whittaker, 2281 W. Grant Blvd.; to J. A. Mercier, 211 Hammond Bldg.; to Wm. Blanck, 26 Waverly ave., and to Wm. Porath, 5 Rich st.

Melrose, Minn.—To M. V. Dueber, St. Cloud, for constructing 9,165 ft. of pipe sewers 10 to 24-in., \$11,414.—Samuel S. Chute, St. Cloud, Engineer.

St. Louis, Mo.—Building Cherokee Sewer, District No. 12, to Manegold & Monohan, \$1,168.59.

St. Louis, Mo.—Construction of Baden Sewer No. 1, to Fruin-Coulon Contracting Co., Merchants' Laclede Bldg.; to the W. F. Riley Construction Co., Navarre Bldg., for second section of the Baden public sewer, \$162,016.

New Bern, N. C.—Laying sewers on streets to be paved, to Frank Hackney.

Clinton, Okla.—Construction of 26,200 ft. of 8-in. lateral sewers of the first quality vit. pipe, together with manholes, lamp-holes and other appurtenances, to J. W. Rooks, \$23,781; other bidders: Hunter & Hunter, \$30,535; E. M. Eby, \$31,614; Stone Construction Co., \$31,262; Connelly Construction Co., \$34,706.

Charleston, S. C.—Extending sewerage system, to Guild & Co., Chattanooga, Tenn., \$51,639.70.

Corpus Christi, Tex.—Contracts for sewerage material have been approved by Council as follows: Manholes, to Hardwick-Abbot Mfg. Co.; alternating gear, to Cameron Septic Tank Co.; steel sheeting, to Carnegie Steel Co.; lumber, to the H. D. Taylor Lumber Co.

Oconomowoc, Wis.—To Mulholland & Son, Kaukauna, to install 2½ miles of sewers.

## BIDS RECEIVED

**Long Beach, Cal.**—Sewer construction in 2d and other streets: Peter Grbovach, \$7,900; S. Zarubica, \$7,889.50, both of Los Angeles; Frank H. Thomas, \$10,963; White & Gaskill, \$15,952.

**Sigourney, Ia.**—Construction of sanitary sewers: W. J. Lana, Harlan, \$41,326; John W. Scott, Ottumwa, \$55,877; Zitteral & Sullivan, Webster City, \$44,819; Henry Rees, Quincy, Ill., \$46,474; J. W. Turner Improvement Co., Des Moines, \$45,932; Blackhawk Construction Co., Waterloo, \$51,246; M. A. Camery, Harlan, \$42,231; Hamilton Bros., Chicago, Ill., \$49,219; Omaha Construction Co., Omaha, Neb., \$43,977; Bash & Grey, Joplin, Mo., \$39,741; Dearborn & Jackson, Cedar Rapids, \$50,253; McGuire & Stanton, Leavenworth, Kan., \$44,112; C. R. McKay, Omaha, Neb., \$46,279; George M. King, Des Moines, \$33,447; Burlington Construction Co., Burlington, \$49,776.

**Melrose, Minn.**—Building sewer system from plans by S. S. Chute, Engineer, St. Cloud; Illstrup & Olson, Minneapolis, \$17,135; Cook Construction Co., Des Moines, Ia., \$15,549; C. H. Prett, Fargo, N. D., \$15,810; William B. Bosworth, Ada, \$14,684; F. E. Kaminski, Watertown, Wis., \$13,309; Frazier & Danforth, Rochester, \$14,919; P. McDonnell, Duluth, \$13,146; Pastoret Lawrence Co., Duluth, \$14,959; L. W. Schrueth, Fargo, \$15,204; Thos. E. Woolley, La Crosse, Wis., \$15,794; G. S. Redmon, Pipestone, \$17,852; M. V. Dueber, St. Cloud, \$11,418.

**St. Louis, Mo.**—Constructing the Forest Park foul water sewer, requiring 9,670 ft. 42-in. and 1,959 ft. 30-in. brick sewer and 1,400 ft. 12 and 18-in. pipe sewer, with manholes, etc.; concrete pump well; also equipping the pumping plant, including furnishing and installing duplicate sets of direct-connected centrifugal pumps and motors, with valves, pipes, etc.; lowest bidder on each contract, 1st section, R. D. Salisbury, \$18,069; 2d section, Wm. F. Riley Construction Co., \$21,960; 3d section, Wm. F. Riley Construction Co., \$27,258; equipment of pumping station to be operated in connection with the system, Reeves & Skinner Machinery Co., lowest bidder, \$4,776.

**Toledo, O.**—Constructing sewers, E. A. Sandrock, lowest bidder, \$3,094.15; 980 ft. 15-in. d.-s. pipe, \$1.65; 284 ft. 12-in., \$1.60; 340 ft. 10-in., \$1.50; 36 ft. 12-in. c.-l. pipe, \$2.10; 650 ft. 6-in., 30c.; all clay material to be excavated; manholes, \$20; Albert Graybowski, \$3,207.24; John McMahon, \$3,228.14; Wm. McMahon, \$3,327.34.

## WATER SUPPLY

**Dorris, Cal.**—Citizens have voted \$12,500 bonds to install water system.

**Fresno, Cal.**—National Board of Fire Underwriters has recommended erection of pumping station, capacity 10,000,000 gals.; station to contain two pumps, operated by steam, gas or oil engines; also extension of water mains.

**Ft. Lupton, Cal.**—Installation of water works is being considered.

**Kingsburg, Cal.**—Plans have been completed by Olmstead & Gillelen, Wright & Callender Bldg., Los Angeles, for proposed water works; cost about \$36,000.

**San Francisco, Cal.**—Board of City Supervisors authorized expenditures as follows for materials for use in construction of auxiliary water-supply system for fire protection: \$20,000 for bolts, nuts and washers and \$13,000 for gate and check valves.

**San Luis Obispo, Cal.**—Plans have been prepared for construction of 5,700,000-gal. earthen reservoir.

**Suisun, Cal.**—Trustees have adopted plans and specifications for enlarging of storage reservoir of municipal water system whereby its capacity will be increased 13,000,000 gals.

**Colorado Springs, Col.**—City has selected Hiram Phillips, Consulting Engineer, Third National Bank Bldg., St. Louis, Mo., to prepare plans for improving water works system.

**New Britain, Conn.**—P. J. Egan, Clerk Water Board, is asking bids for about 10,000 ft. of 6-in. and 3,000 ft. of 8-in. water pipe.

**Waterbury, Conn.**—City Engineer Cairns has estimated cost of laying 6-in. water main in Fleet st. at \$1,450 and in Pilgrim ave. at \$1,700.

**Waterbury, Conn.**—Board of Public Works has authorized John R. Walker, Superintendent of Water, to purchase 20,000 ft. of water pipe of various sizes.

**Milton, Del.**—Citizens will vote Mar. 4 on municipal water works proposition.

**Americus, Ga.**—Citizens will vote April 4 on \$25,000 water works improvements.

**Marietta, Ga.**—Citizens will vote May 1 on \$15,000 bonds to extend water and sewer mains.

**Pelham, Ga.**—Citizens will vote on \$25,000 bonds for improvements to water system and for other work.

**Flora, Ill.**—Cost of constructing proposed water works and sewer system of vit. pipe has been estimated at \$87,000.—J. S. Spoker, Vincennes, Ind., Engineer.

**Toulon, Ill.**—Engineers W. S. Shields Co., 140 Dearborn st., Chicago, are preparing plans for installation of c.-l. water pipe system.—A. Shinn, City Clerk.

**South Bend, Ind.**—Plans are being prepared by City Engineer A. J. Hammond for Bowman Creek sewer; pipes to be 10 ft. in diameter at intake and 12 ft. at the outlet.

**Burlington, Ia.**—Citizens' Water Co. contemplates making improvements at its plant this summer that will aggregate over \$13,000; improvements consist in installing a new pumping engine to pump water from the river to settling tanks and placing of two new filters; engine will cost \$7,711.30 and the filters will cost \$5,830.30.

**Garden Grove, Ia.**—Election on bonds for installation of water works is being considered.

**Luray, Kan.**—Citizens have voted \$20,000 bonds for construction of water works.—Rollins Westover, Kansas City, Mo., Engineers; P. E. Moss, City Clerk.

**McPherson, Kan.**—Council is considering installation of water mains on Main st. **Cumberland, Md.**—Council has appointed Advisory Committee to act with it in installing proposed water supply.

**Frederick, Md.**—William H. Boardman, Philadelphia, Hydraulic Engineer, has been appointed to go over water situation in this city and make recommendation for increase of water supply.

**Andover, Mass.**—Town will vote on \$20,000 bond issue to extend and improve water system.

**Springfield, Mass.**—Town of East Meadow has again asked that town be connected with Little River system.

**Uxbridge, Mass.**—Town will expend \$20,000 on installation of water mains.

**Wayne, Mich.**—Village Council has voted to construct water plant.

**Arlington, Minn.**—Plans and specifications are being prepared by the Oscar Clausen Engineering Co., 514-515 National German American Bank Bldg., St. Paul, for installation of water works system.

**Clara City, Minn.**—Plans are being prepared by the Oscar Clausen Engineering Co., 514-515 National German-American Bank Bldg., St. Paul, for construction of water works system.

**Fergus Falls, Minn.**—City Engineer Hans Blegen has prepared plans for small filter for water works.

**Madison Lake, Minn.**—City will install water plant, including 60,000-gal. steel tank and about 3,000 ft. of 6 and 8-in. mains.

**St. Joseph, Mo.**—City is considering laying of water mains to northeast suburbs.

**Havre, Mont.**—Sinking of additional wells has been recommended.

**Bath, N. Y.**—City is considering construction of water mains in Morris, Steuben, William and Haverling sts.

**Jamestown, N. Y.**—Municipal Water Commission has engaged experts to prepare plans and estimates for improving local water plant so as to secure more water and increase the pumping facilities.

**Mt. Morris, N. Y.**—Citizens have voted \$100,000 bonds to construct water system by securing water near Portage; rights of way will be secured and correct estimate of work will be made at once.

**Rochester, N. Y.**—Board of Contract and Supply will ask bids for furnishing water pipes, valves and stop gates for Water Department.

**Rochester, N. Y.**—Council is considering ordinances for extension of water pipes on 23 streets; City Engineer Fisher has estimated cost at \$175,000.

**Rutherfordton, N. C.**—Citizens have voted \$25,000 bonds for construction of water works and electric light plant.

**Smithfield, N. C.**—Citizens have voted \$55,000 bonds for construction of water works, electric light plant and sewer system.

**Centerburg, O.**—H. L. Maddocks, Consulting Engineer, 504 Trust Bldg., Newark, has been selected by Village Council to prepare plans and specifications for construction of water supply system.

**East Liverpool, O.**—City has selected Chester & Fleming, Pittsburg, Pa., to act as engineers in connection with proposed improvements to water system and installation of pumping station.

**Niles, O.**—City Engineer Brewer has received plans for substructure of the filtration plant from Burgess & Long.

**North Brewster, O.**—North Brewster Water Co. has been organized and will install plant.—J. W. Lamoreaux, President.

**Ada, Okla.**—Bids will be received about April 15 for construction of water works from plans of Goodwin & Harper, Kansas City, Mo.; cost about \$140,000.

**Jacksonville, Ore.**—Bids will be received March 15 for purchase of \$30,000 bonds to construct water works system.

**Lebanon, Pa.**—Water Board will ask for bonds for installing pump at pumping station.

**Media, Pa.**—Water Committee is considering installation of water main on South Orange st.

**Pottstown, Pa.**—Citizens of West Pottsgrove, township adjacent to city, will petition Supervisors to provide number of fire plugs.

**Manchester, Tenn.**—Legislature has authorized issuance of \$25,000 water and electric light bonds.

**Denison, Tex.**—State National Bank of Denison has been awarded Shawnee Lake pipe line bond issue of \$50,000.

**Electra, Tex.**—City is considering installation of water system. S. Walker is interested.

**Fort Worth, Tex.**—Citizens will vote April 4 on \$30,000 bonds for establishment of water works system for Polytechnic Heights.

**San Antonio, Tex.**—Finance Committee is considering \$10,000 appropriation for sinking one or more artesian wells at head of San Antonio River.

**Winters, Tex.**—Citizens have voted \$2,000 bonds to install water works; O'Neill Engineering Co. has prepared plans.

**Salt Lake City, Utah.**—Council has passed resolution authorizing \$1,000 expenditure for construction of wooden dam across Jordan River at 12th South st.

**Rockford, Wash.**—Plans are being prepared for additional construction of 1,600 ft. of new iron mains.

**Seattle, Wash.**—Plans and specifications have been approved by Board of Public Works for pumping station for Interbay district.

**Tacoma, Wash.**—City Commissioners have adopted resolution to call for bids for completion of two divisions of Green River gravity water system.

**New Lisbon, Wis.**—Citizens have voted \$20,000 of bonds for the construction of water works plant.

**Battleford, Sask., Can.**—Town has decided to install \$100,000 water works system.

**Goderich, Ont., Can.**—City will expend \$30,000 on water works this year.

**Melville, Sask., Can.**—Plans are being prepared for construction of water system. Leon Benoit, city, is interested.

**Montreal, Que., Can.**—Hering & Fuller, New York, N. Y., are preparing plans and specifications for proposed filtration plant; cost about \$1,250,000.

**Ridgetown, Ont., Can.**—F. W. Farcombe, London, Ont., will prepare plans for installation of water works system.

**St. Boniface, Man., Can.**—Plans are being prepared for installation of reservoir; capacity, 1,000,000 gals.

## CONTRACTS AWARDED

**Dalton, Ga.**—Following firms have secured contracts for installation of proposed water works and electric light plant: The Casey-Hedges Company, the International Steam Pump Company, Platt Iron Works Company, United States Cast Iron Pipe & Foundry Company, Columbia Iron Works, M. P. Flynn & Co., Bingham & Taylor, John W. Ashe, Westinghouse Company and Ball Engine Company.

**Gainesville, Ga.**—Furnishing pumps, one each of steam and electric, to Henry R. Worthington, through their Atlanta office; standpipe and boiler, to R. D. Vole Manufacturing Co., Newnan; filters, to the New New York; c.-l. pipes, to United States Cast Iron Pipe and Foundry Co., Chattanooga, Tenn.; terra cotta pipes, to H. Stevens Sons Co., Macon; hydrants and valves, to R. D. Wood & Co., Philadelphia; pumping station, which is the erection of the brick building, to Prater & Loden, Gainesville.

**South Bend, Ind.**—To the H. Mueller Manufacturing Co., Decatur, Ill., for furnishing 1,200 brass connections, \$937.75; approximately 700 tons of pipe and fittings, to Glamorgan Pipe and Foundry Co., Lynchburg, Va., 6 and 8-in. pipe \$23.50 per ton, 10 and 12-in. pipe \$23 per ton, 14 and 24-in. pipe, \$22 per ton, and standard special castings \$47 per ton.

**Jefferson, Ia.**—To C. W. Roland & Co., Des Moines, for constructing water works, \$6,200.

**Ottumwa, Ia.**—Water works improvements: To New York Continental Jewel Filtration Co., New York, for filter, \$38,240; to American C. I. and Pipe Co., Birmingham, Ala., for pipe, \$24.10 per ton f.o.b. city; concrete work, to Wm. Horabin, Iowa City.

**Duluth, Minn.**—By Board of Water and Light Commissioners, for 3,571 tons of c.-l. water and gas pipe to be used coming year, to United States Cast Iron Pipe and Foundry Co., Chicago, which bid average price of \$23.83 a ton, or \$85,112.60; American Car and Foundry Co., Detroit, bid average of \$24.35 per ton, or \$86,954.85, and R. D. Wood &



Co., Philadelphia, bid average of \$24.56 a ton, or \$87,716.95.

**Bozeman, Mont.**—Enlarging water works system, to Fred Birch, Fargo, \$40,000.

**Great Falls, Mont.**—To American Cast Iron Pipe Co., for 135 tons of 12-in. water pipe and specials, \$6,116.

**Wymore, Neb.**—Construction of municipal water and lighting plant, to Elkhorn Construction Co., Fremont, laying water mains, \$3,150; to Frank Wheeler, Havelock, constructing electric line, \$1,150; to St. Mary's Machine Co., Ohio, machines for general power, \$4,250.

**Schenectady, N. Y.**—Supply 180 tons of c.-i. pipe, to Chas. Miller & Co., Utica; furnishing two tons of pig lead, to same company, \$97 per ton.

**Silver Springs, N. Y.**—Sinking test well, to New York and New Jersey Well Co.

**Erie, Pa.**—Furnishing iron pipe, to Standard C. I. Pipe Co., Bristol, \$21.95 per ton; special connections, \$50 per ton; furnishing 18 tons of lead, to John Wahl Company, St. Louis, \$4.37½ per 100 lbs.

**Temple, Tex.**—Installing equipment of proposed modern filtration plant, to Pittsburgh Filter Mfg. Co., Pittsburgh, Pa.; building and other work connected with the plant, to W. C. Rettiger, Belton, Tex.; plant will cost \$27,190, and will have a capacity of 2,000,000 every 24 hours.

**Ogden, Utah.**—Building Coldwater Canyon conduit, to J. P. O'Neil, \$67,463.17.

**Colville, Wash.**—Furnishing 3,200 ft. wood pipe and quantity of wrapped copper pipe, to Geo. Van Tuyl, city, \$1,120.

**Burnaby, B. C., Can.**—To W. Thomas, 731 Jerves st., Vancouver, to construct lap weld steel pipe water system.

**Ottawa, Ont., Can.**—Supplying c. i. pipe, to Canadian Iron Corporation, Ltd., Montreal, \$11,579.

### BIDS RECEIVED

**Webb City, Mo.**—Construction of reinforced concrete reservoir, of 1,500,000 gals. capacity: Redmond, Putnam & Co., city, \$14,850; O. B. Vanderpool, Joplin, \$12,200; F. W. Keller, city, \$11,995; Oklahoma City Construction Co., Oklahoma City, Okla., \$11,450; J. C. Barr & Co., Joplin, \$11,444; S. M. Kerns, Denver, Col., \$9,990; Webb City Granolithic Co., city, \$9,975; F. W. Caulkins, city, \$9,676; Joseph Schneider, Monett, \$8,495; J. O. Williams, Aurora, \$7,400.

**Spokane, Wash.**—J. M. Yoeman, 04223 Howard st., was lowest of six bidders for contract for building new Lincoln Heights auxiliary pumping station, \$4,247. Other bidders: Shirley & Martin, \$4,678; Auld Bros., \$4,588.75; Alverson & Koepfer, \$5,697; Cox & Parker, \$4,575; and R. C. Alloway, \$5,950; estimate of Water Engineer Alexander Lindsay was \$5,000.

### LIGHTING AND POWER

**Albertville, Ala.**—Citizens have voted issuance of \$7,000 of bonds for construction of electric light plant.

**Eufaula, Ala.**—Council has decided to install municipal electric light plant. C. M. Gammage, Chairman Finance Committee, is interested.

**Huntsville, Ala.**—Huntsville Gas Light Co. has sold its plant and franchise to a Philadelphia corporation; new company will make extensive improvements after taking charge, about the middle of next month.

**Clarksville, Ark.**—E. J. Connell will rebuild electric light plant.

**Newport, Cal.**—Resolution has been passed by Council providing for construction of a municipal electric light plant.—L. S. Wilkinson, City Clerk.

**Turlock, Cal.**—La Grange Water and Power Co. will install street electric lighting system.—A. Scott, La Grange, Superintendent.

**Denver, Col.**—Denver Gas and Electric Co. is preparing plans to improve system, including installation of lighting system for the boulevard and extension of gas mains; also ornamental lamp standards for several boulevard streets; this work will cost about \$400,000 and will be under contract with city.—W. J. Barker, General Superintendent.

**Marietta, Ga.**—Citizens will vote May 1 on \$20,000 of electric light bonds.

**Pelham, Ga.**—Citizens will vote on \$25,000 of bonds for improvement of light system.

**Sandoval, Ill.**—Installation of municipal electric light plant is being considered. R. R. McCall and W. J. McNally are interested.

**Fort Wayne, Ind.**—Cost of installing ornamental lighting system on Calhoun st. has been estimated by City Electrician Frank Dix at \$864 per block.

**Kendallville, Ind.**—Council will purchase additional dynamos for lighting plant.

**Warsaw, Ind.**—Winona Electric Light and Water Co. is considering improvements,

including new pumps.—Theo. Frazer, Manager.

**Dodge City, Kan.**—Citizens have defeated proposition to build municipal electric light plant.

**Severy, Kan.**—Council has granted W. H. and Earl J. Mathis, Wichita, franchise for electric light plant.

**Lagrange, Ky.**—City has granted electric light franchise to J. C. Emmick, Lewisport.

**Maysville, Ky.**—Maysville Public Service Co. will take over Maysville Gas and Electric Light Co. and will enlarge plant; gas house may be erected; connections will be at once laid from National gas pipe line to this city.

**Georgetown, Mass.**—Town will vote on improved lighting system.

**South Framingham, Mass.**—Town will consider subject of municipal ownership of electric lighting and power.

**Grand Rapids, Mich.**—Grand Rapids Gas Light Co. will expend \$50,000 in extending mains.

**Chillicothe, Mo.**—Contract will be let this spring for construction of a municipal electric light plant; plans by Fuller-Coult Co., Chemical Bldg., St. Louis; cost about \$50,000.—John H. Taylor, Mayor.

**Monett, Mo.**—Plans and specifications have been prepared by Rollins & Westover, Engineers, Beals Bldg., Kansas City, for proposed electric light plant.

**Lavina, Mont.**—B. F. Fullmer, Lewiston, has decided to install electric light plant.

**Binghamton, N. Y.**—Council is considering two ordinances, one directing the Board of Contract and Supply to advertise for bids for street lighting on five and ten-year contracts; other requesting Board of Contract and Supply not to make street lighting contract for period longer than one year.

**Brookport, N. Y.**—Additional stationary transformer of 600 h.p. capacity will be installed in substation of the Buffalo-Lockport and Rochester Railway Co.—J. H. Cahn, Rochester, Superintendent.

**Richfield Springs, N. Y.**—Richfield Springs Electric Light & Power Company will soon commence erection of \$40,000 model plant.

**Rutherfordton, N. C.**—Citizens have voted \$35,000 bonds for construction of electric light plant and water works.

**Smithfield, N. C.**—Citizens have voted \$55,000 of bonds for construction of electric light plant, sewer system and water works.

**Barberton, O.**—Council will consider petition asking installation of proper equipment at pumping station to make it municipal lighting plant.

**Greenfield, O.**—Board of Public Works has advertised for bids for the reconstruction of electric light system at cost of \$20,000.

**North Brewster, O.**—North Brewster Electric Light, Heat and Power Co. has been organized and will erect plant.—J. W. Lamoreaux, President.

**Lock Haven, Pa.**—Bids are wanted for lighting the city with 10 arc lamps and 25 incandescents.—C. E. Oberheim, City Clerk.

**Royersford, Pa.**—Town is considering establishing of a municipal electric light system, and Councilman Saylor is investigating similar enterprises at Pennsburg.

**Hayti, S. D.**—S. M. Ellis and J. A. Snyder, Watertown, are interested in proposed construction of electric light plant.

**Jackson, Tenn.**—City Council, R. L. Beare, Chairman Special Committee, is interested in ornamental street lighting fixtures for business section.

**Seattle, Wash.**—Specifications have been submitted to Board of Public Works for 22,000 ft. of 2, 3, 4, 8, 12, 20, 30 and 40-conductor cable for use of city electrician's department; bids will soon be called for.

**Spokane, Wash.**—Panhandle Electric Railway and Power Co. will erect \$2,000,000 plant and transmission line to bring power from Priest River to Spokane and will enter into active competition with the Washington Water Power Co.—A. J. Smith, Local Agent.

**Calgary, Alta., Can.**—Natural Gas Company, Calgary, will lay piping from Gleichen, 55 miles distant, at approximate cost of \$3,500,000; work will start this spring.

**Fort William, Ont., Can.**—Kaministiquia Power Company has voted to spend \$250,000 this summer for enlarging power plant. R. S. Kelsch, Construction Engineer.

### CONTRACTS AWARDED

**Staunton, Ill.**—Installing electrical apparatus in municipal electric light plant, to Wesco Supply Co., St. Louis, Mo., \$6,725.

**Chesterton, Ind.**—By Northern Indiana Gas and Electric Co., for two 3550-KVA. steam turbines, to Westinghouse Machine Co., Pittsburgh, Pa.; turbines will be connected to a 750-KVA., 13,200-volt, 3-phase, 60-cycle Westinghouse generator and will operate on a steam pressure of 75 lbs. and will exhaust into a vacuum of 28-in.

**Trenton, N. J.**—Lighting streets for next

five years, to the Public Service Corp., \$80 per year for arc and \$27 for incandescent lamps.

**Georgetown, Tex.**—Building of \$3,000 power house, to James Waterson.

**Chase City, Va.**—To John L. Livers, Grottoes, for construction of electric light plant; estimated cost \$20,000.—J. Kent White, Engineer.

**Seattle, Wash.**—Third ave. et al, cluster lights, Subdivision No. 2, to Olympic Foundry Company, \$3,824.

**Fort Frances, Ont., Can.**—To Nelson & Cassaday to supply electric light poles for the town lighting system, \$1.75 per pole for 30 ft. 6 in. top and \$3.25 per pole for 35 ft. 7 in. top.

### BIDS RECEIVED

**Springfield, Mass.**—Furnishing and installing cable for underground conduit system for municipal lighting and power plant: Safety Insulated Wire and Cable Co., Boston and New York, \$11,655.03 for the paper insulation cable and the Standard Underground Cable Co., Pittsburgh, Pa., \$13,511.45 for the same kind of cable; latter company also put in bid of \$16,614.76 for varnished cambric insulation cable.

### FIRE EQUIPMENT

**Montgomery, Ala.**—City will erect fire station in southern section.—A. R. Gilchrist, City Engineer.

**Fresno, Cal.**—National Board of Fire Underwriters has recommended purchase of auto chemical engine equipped with two 60-gal. tanks and 4 salvage covers, modern first-size engine, auto combination hose wagon, auto for fire chief and minor equipment, also installation of following apparatus for fire alarm system: Six-circuit non-interfering, automatic repeater, additional 4-circuit charging board, motor generator set for charging battery, etc.

**Los Angeles, Cal.**—Fire Chief A. J. Eley has asked Council to purchase fast auto.

**Terryville, Conn.**—Town has appropriated \$1,800 to purchase hose carriage and 800 ft. of hose. Alfred Blakeslee is interested.

**East St. Louis, Ill.**—Building Commissioner Hamler has been requested by Mayor Cook to submit plans for additions to and alteration of Fire Department Headquarters Bldg. on Main st.; work is to cost \$6,000.

**Prairieburg, Ia.**—Purchase of fire apparatus is being considered.

**Bridgewater, Mass.**—Town will erect fire house.

**Cliftondale, Mass.**—Town is considering purchase of auto chemical.

**Conway, Mass.**—Town has decided to purchase chemical engine.

**Northampton, Mass.**—Fire Chief F. E. Chase is urging purchase of \$5,000 auto combination chemical and hose wagon.

**Wakefield, Mass.**—Chief Code is urging purchase of auto fire engine.

**Central City, Neb.**—Council has decided to purchase fire engine.

**Elizabeth, N. J.**—Finance and Fire Committees are considering installation of fire engine house with suitable apparatus in Tenth Ward, purchase of auto fire engine or engines and relocation of some fire houses.

**Flemington, N. J.**—Fire Department is securing funds for erection of fire house.

**Millville, N. J.**—Fire Committee will purchase site for erection of hose house in West Millville.

**New Brunswick, N. J.**—Hibernia Fire Co. No. 6 will erect \$13,000 station.

**Paterson, N. J.**—Fire and Police Committee is considering following improvements for fire department: Converting two first-size engines, \$9,000; converting two supply wagons, \$7,000; one gasoline propelled truck, \$9,000; purchase and improvement of property on Temple Hill, \$7,500; auto engine, \$7,500; erection of fire house in West Paterson, \$4,500; converting chemical engine, \$3,000.

**Salem, N. J.**—Council has decided to secure bids for placing boiler in old steam fire engine.

**Binghamton, N. Y.**—Fire Commissioner J. M. Henwood will purchase 500 ft. of fabric fire hose.

**Scotia, N. Y.**—Assistant Fire Chief E. C. Hoyt has submitted plans for fire alarm system for village, costing about \$2,500.

**Syracuse, N. Y.**—Erection of hose house in vicinity of Butternut and Manlius sts. is being urged.

**Yonkers, N. Y.**—Council has passed resolution for purchase of motor cars for Fire Chief and his two assistants; also two ambulances.

**Astoria, Ore.**—Fire Chief C. E. Coster has recommended purchase of auto combination chemical truck and hose; also installation of additional fire alarm boxes and equipping of two tugs with fire pumps.

**Erie, Pa.**—Fire Commissioners Hogan, Walker and Hass have decided immediate request should be made of Councils to provide for rebuilding of No. 7 fire engine and the replacing of No. 5 fire engine and purchase of additional hose.

**Mahoney City, Pa.**—Alert Fire Co. will erect \$10,000 engine house.

**Selinsgrove, Pa.**—Borough Council has voted to purchase chemical fire engine.

**Wanamie, Pa.**—Architect Emery, of Wilkes Barre, will prepare plans for erection of three fire houses.

**Weldon, Pa.**—Weldon Fire Co. is receiving bids for erection of fire house.—Geo. Natress & Son, 12th and Walnut sts., Philadelphia, Architects.

**Providence, R. I.**—Fire Commissioners have been authorized by Board of Contract and Supply to purchase Knox motor fire vehicle for department; vehicle will carry 1,000 ft. of hose; chemical engine and 150 ft. of chemical hose, and will also accommodate a crew of 10 men.

**Madison, Wis.**—Plans are being prepared for erection of proposed No. 2 fire station.

**Fort William, Ont., Can.**—Canadian Fire Underwriters' inspector has recommended purchase of two additional fire engines; also chemical engine to be placed in No. 8 station.

### CONTRACTS AWARDED

**Bridgeport, Conn.**—Converting horse-drawn hose wagon into auto chemical, to Locomobile Co., \$2,000.

**Hartford, Conn.**—Furnishing auto chemical combination car, also auto for officers of fire department, to Pope Manufacturing Co.

**Duluth, Minn.**—Auto combination chemical and hose wagon, to American-La France Engine Co., Elmira, N. Y., \$5,000.

**Millville, N. J.**—Furnishing fire hose: 500 ft., to Eureka Fire Hose Co., Boston, \$1 per ft. for Paragon brand; 500 ft., to New Jersey Car Spring and Rubber Co., Jersey City, \$1 per ft.

**White Plains, N. Y.**—Furnishing Locomobile combination auto chemical and hose wagon, to Chas. Paul, \$6,000; Machine will be made at Bridgeport, Conn.

**Portland, Ore.**—To Bowers Rubber Co., San Francisco, and Columbia Hardware Co., city, for furnishing 1,000 ft. of 2½-in. hose, 90c. per ft., and Eureka Fire Hose Co. and A. G. Long, for 1,000 ft. each, \$1 per ft.; A. G. Long also received the order for 600 ft. of 1½-in. hose, 67c. per ft.

**Oshkosh, Wis.**—Building hose house at West New York and Central aves., to J. T. Raycraft, city, \$9,500.

### BIDS RECEIVED

**Pueblo, Col.**—Furnishing auto fire truck: Victor Fire Auto Co., Buffalo, N. Y., 60-70 hp., four cylinders, \$1,500 cash and the remainder at 4 per cent interest, \$4,228; Anderson Fire Supply Co., Kansas City, by George Jackson Carriage Co., Pueblo, 78 hp., four cylinders, delivery in 90 days, \$4,900 on time and \$4,802 cash; Seagrave Motor Truck Co., Columbus, O., by Pueblo Auto Co., Pueblo, 70 hp., four-cylinders, 90 day delivery, \$4,875; American-La France Auto Fire Engine Co., Elmira, N. Y., by Ideal Motor Co., city, 70 hp., 90 days delivery f.o.b. Pueblo, with forfeiture of \$100 per day for failure to deliver after that time; four cylinders and expert from factory to instruct in use, \$5,750; Webb Motor Fire Appliance Co., St. Louis, by Pueblo Auto Goods Co., two bids: No. 1, for six-cylinder, 90 hp. car, speed 60 miles per hour with equipment and men, four speeds forward, 120 days delivery, \$5,750; bid No. 2, four cylinders, 70 hp. f.o.b. Pueblo, \$5,400; Robinson Fire Auto Co., St. Louis, 80 hp., 120 days delivery, no figure named.

**Haverhill, Mass.**—Furnishing fire hose: Cornelius Callahan Co., 65c.; Eureka Fire Hose Co., 65c.; Combination Ladder Co., 82c., 75c., 80c., 77c. and 85c.; Triple C, 59½c. and 64½c.; La France, 61½c. and 60c.; Boston Woven Hose, 68c. and 62c.; Voorhees Co., 70c., 65c. and 60c.; Mineralized Rubber, 75c.; Jersey Rubber, 65c., 55c., 65c.

### BRIDGES

**Phoenix, Ariz.**—State Engineer J. B. Girard has prepared plans for erection of reinforced concrete bridge near this city.

**Los Angeles, Cal.**—Engineers Mayberry & Parker, Pacific Electric Bldg., have been retained by County Board of Supervisors of Ventura County to prepare plans for 11 reinforced concrete bridges and to act as Consulting Engineers for the erection of 9 steel bridges.

**Denver, Col.**—Construction of a bridge over the Platte River at Alameda ave. is being considered at cost of about \$30,000.

**South Bend, Ind.**—Board of Public Works is planning to build bridge across river at Washington ave.

**Waterloo, Ia.**—City will co-operate with the Waterloo, Cedar Falls and Northern Railway in erecting bridge at cut-off next spring.

**Elizabethtown, Ky.**—Bridge to cost \$60,000 will be erected between Illinois Central and Henderson Route bridges, over Salt River.

**Shreveport, La.**—Plans have been prepared for building of traffic bridge over Red River, 1,000 ft. below site of the present combination railroad and traffic structure, which is largely owned by Vicksburg, Shreveport & Pacific Railway; new bridge will land on high bluff between Jones and Lake sts., in this city; estimated cost is \$225,000.

**Monson, Mass.**—Town is considering replacing of wooden bridges with concrete structures.

**Menominee, Mich.**—By Joint Bridge Committee of Menominee and Manette, to erect bridge to Wausau Iron Works, \$24,000.

**Republic, Mich.**—Bids, accompanied by detail plans and specifications, will be received for building a bridge over Michigamme River; bridge is to be of reinforced concrete or steel truss with concrete floor.—A. Siebenthal, Republic Township, Supervisor.

**Duluth, Minn.**—Bids will soon be asked for erection of four bridges, two of steel construction with concrete decking, and two of all concrete construction.—H. J. Hammerbeck, Chairman Commissioners of Roads and Bridges.

**Port Clinton, O.**—Bids will soon be asked by County Commissioners for the construction of drawbridge over Portage River; cost \$15,000.

**Washington Court House, O.**—Fayette County will build five new bridges at estimated cost of \$25,000.

**Kittanning, Pa.**—City is considering construction of bridge over Rough Run, near Winfield; plans have been prepared.

**Philadelphia, Pa.**—Council has adopted resolution requesting Director of Public Works to confer with United States Engineer officers and authorities of Delaware County relative to construction of bridge on line of 84th st. over Darby Creek.

**Lynchburg, Va.**—Street Committee is considering erection of \$200,000 concrete bridge at foot of 9th st.

**Tacoma, Wash.**—Waddell & Harrington, Kansas City, will prepare vertical lift and bascule bridge plans for structures city contemplates erecting over city waterway and Puyallup River.

### CONTRACTS AWARDED

**Fairmount, Ill.**—To R. C. Spandau, Danville, for constructing bridge over Salt Fork River, near Fairmount, \$6,995.

**Kingston, N. Y.**—Building Eddyville bridge, to Lane Bridge Co., Corning, \$16,950; additional concrete, \$6; other bidders: E. J. Doyle & Co., Albany, to construct as per specifications, \$24,500; additional concrete, \$13 per cu. yd.; Owego Bridge Co., Owego, \$21,245; additional concrete, \$10; York Bridge Co., York, Pa., \$20,551; additional concrete, \$12; Lupfer & Remick, Buffalo, \$24,290; additional concrete, \$20; United Construction Co., Albany, \$25,152; additional concrete, \$20; Penn Bridge Co., Beaver Falls, Pa., \$20,361; additional concrete, \$15.

### BIDS RECEIVED

**San Jose, Cal.**—Erection of bridge on Meridian road: Esterly Construction Co., \$6,993; John Doyle, \$5,967; J. W. Williams, \$6,845; L. M. Scott, \$5,250; J. W. Reynolds, \$7,749; Charles P. Nott, \$6,357; James Casley, \$5,850; William Radtke, \$4,780.

### MISCELLANEOUS

**Douglas, Ariz.**—Mayor Meguire is planning for laying out of public park and playground on five acres owned by city.

**Pelham, Ga.**—Citizens will vote on bonds for erection of municipal building.

**Hutchinson, Kan.**—Citizens will vote March 27 on \$125,000 bonds to erect auditorium.

**Hutchinson, Kan.**—City Commission has decided to ask for bids for installation of \$1,000 incinerating plant.—G. L. McLane, City Engineer.

**Newport, Ky.**—Police Committee will ask for bids for installation of patrol system.

**Hagerstown, Md.**—Citizens will vote March 23 on \$50,000 bonds to purchase public park.

**Boston, Mass.**—Derby, Robinson & Shepard will prepare plans for proposed \$20,000 Parkman bandstand.

**Fitchburg, Mass.**—Police Committee is considering purchase of automobile.

**Lawrence, Mass.**—Mayor Cahill and Board of Health are gathering information on garbage collection.

**Detroit, Mich.**—Architect G. A. Mueller, Breitmeyer Bldg., has prepared plans for erection of \$37,000 branch library building at King and Woodward aves.

**Saginaw, Mich.**—Citizens will vote April 3 on erection of central police station.

**North Platte, Neb.**—Plans are being prepared for erection of proposed Carnegie library on Court House Square.

**Yonkers, N. Y.**—Council has passed resolution for purchase of two auto ambulances and three motor cars.

**Cherryville, N. C.**—Town will issue \$8,000 bonds to erect city hall.

**Cincinnati, O.**—Fire has practically destroyed plant of the Cincinnati Reduction Co. near Anderson's Ferry in western part of city, causing loss of \$50,000; company had the contract for the collection, removal and disposal of the garbage of city, and other means of disposing of city's refuse will have to be provided for until plant is rebuilt.

**Klamath Falls, Ore.**—Citizens will again vote on \$30,000 bonds for erection of city hall and \$25,000 bonds for purchase of garbage site.

**Union City, Tenn.**—Architect H. D. Whitfield, 160 5th ave., New York City, has prepared plans for erection of \$10,000 Carnegie library.

**Roanoke, Va.**—Citizens have voted \$230,000 bonds to purchase site and erect public building and \$120,000 to purchase eight acres for public library, playgrounds and park.

**Seattle, Wash.**—Board of Park Commissioners, Central Bldg., will take bids soon for the erection of an aviary and monkey house at Woodland Park; estimated cost, \$15,000. Frank Allen, Inc., Architects.

**Seattle, Wash.**—Construction of five comfort stations to be established on playgrounds throughout city is contemplated by Park Board; no architect chosen. R. W. Cotterill, Secretary.

**Snohomish, Wash.**—Council is considering erection of municipal building at 2d st. and Ave. A.

**Niagara Falls, Ont., Can.**—Plans are being prepared for enlarging city hall.

### CONTRACTS AWARDED

**Gadsden, Ala.**—To Southern Structural Steel Co., San Antonio, Tex., to erect \$25,000 jail.

**Schenectady, N. Y.**—Furnishing street flushing machine, to Chas. Hvass & Co., New York, \$850; street sprinkler, to Austin Western Co., New York, \$317.50; refilling brooms in street sweep, to Chas. Hvass & Co., \$7.50 per broom.

### BIDS RECEIVED

**Oakland, Cal.**—Construction and maintenance of levees in Key Route basin by Board of Public Works; for levee extension along 14th st. in Key Route basin and for dredging of the channel along pier head line on the west side of north arm of harbor; first proposition the bidders were: The Vulcan Dredging Co., Marshall C. Harris and the California Reclamation Co. On the second proposition: The California Reclamation Company and M. C. Harris. On the third proposition: M. C. Harris, San Francisco Bridge Co. and the Charles Nelson Co. Dredging of channel in the Oakland harbor, Charles Nelson Co. was lowest bidder, 7 cts. per cu. yd., and will probably receive contract; on the other two propositions, in which there were a number of specifications, the bids will be tabulated and contract soon awarded.

**Holyoke, Mass.**—Construction, plumbing and heating and ventilating of tuberculosis hospital by Board of Public Works. Lowest bidders were as follows: General construction, V. V. Goddard, \$8,700; plumbing, D. J. Bowler, \$681; heating and ventilating, M. J. Moriarty, \$766 and \$1,020. Bids, other than the lowest, are as follows: General construction, Joseph Lalibertie, \$12,800; L. B. Smith, \$9,500; Israel Ducharme, \$8,888; Contractor Walsh, \$9,840; L. Carreau & Son, \$9,270; plumbing, M. J. Moriarty, \$770; Sullivan & Carmody, \$869; C. P. Lyman, \$757. Heating and ventilating, D. J. Bowler, \$1,047; Holyoke Supply Co., \$799 and \$1,259; Holyoke Valve & Hydrant company, \$1,029 and \$1,326; P. J. Donnelly, \$985 and \$1,250.

**Spokane, Wash.**—Installing police signal alarm system: Fred A. Wood, local representative of the Gamewell Fire Alarm Telegraph Co., \$10,180 for system with ordinary equipment; for complete equipment \$17,000 was bid by the same company; Signalphone Alarm Co., Milwaukee, \$10,220, through C. E. Stillwell, their local representative; N. G. Carhart, representing Western Electric Co., Seattle, \$7,470; Dean Electric Co., Elyria, O., through their representative, Merton J. Corwin, offered to place their "Flashlite" system in at \$6,400.



## TOO LATE FOR CLASSIFICATION

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
New Jersey	Jersey City	Mar. 13, 2 p.m.	Repaving portion of Jackson Avenue	Geo. T. Bouton, Clk. B. S. & W. C.
New Jersey	Audubon	Mar. 13, 6 p.m.	Grading various streets	Jay Y. Krout, Borough Clerk.
Wisconsin	Superior	Mar. 14, noon	Furnishing corrugated metal culverts for season 1911	C. J. Morisset, Comr. Highways.
Massachusetts	Springfield	Mar. 15, noon	Furn. trap rock, cement, cast. curb., vit. clay pipe and hardware	A. A. Adams, Supt. Sts. and Sewers.
Iowa	Colfax	Mar. 15, 7:30 p.m.	Laying, curbing and grading about 20,000 yds. brick work;	W. S. Cutter, City Clerk.
			9,500 lin. ft. cement curb.	Caldwell Norton, Pres. Bd. Pub. Wks.
Kentucky	Louisville	Mar. 16, 2 p.m.	Asphalting parts of ten streets	J. G. Sutton, City Secy.
Texas	Beaumont	Mar. 21, 10 a.m.	Repaving portion of Pearl Street	
<b>SEWERAGE</b>				
Washington	Leavenworth	Mar. 14, 2 p.m.	Constructing 4,000 lin. ft. sewer, 10-12 in. pipe	Guy A. Hamilton, Town Clerk.
New York	New York	Mar. 16, 2:30 p.m.	Construct. sewers for New York City Farm Colony, Boro. of Rich	Michael J. Drummond, Comr.
North Dakota	Minot	Mar. 27	Constructing four miles of sewers	Board of City Commissioners.
Sask., Can.	Moose Jaw	Apr. 10, 8:30 p.m.	Furnishing and laying about 30,700 lin. ft. tile pipe sewer, building manholes, etc.; separate bids. Con. sewage disposal plant, etc.	W. F. Heal, City Clerk.
<b>WATER SUPPLY</b>				
Minnesota	Minneapolis	Mar. 10, 7:30 p.m.	Furnishing fire hydrants	Henry N. Knott, City Clerk.
Minnesota	Minneapolis	Mar. 10, 7:30 p.m.	Furnishing 300 screw trench braces for Water Dept.	Henry N. Knott, City Clerk.
Massachusetts	Boston	Mar. 14, 11 a.m.	Furnishing about 2,800 tons cast iron pipe different sizes, iron castings such as manholes, catch basin frames, etc.	J. Edward Mullen, Supt. Supplies.
Massachusetts	Boston	Mar. 15, 11 a.m.	Furnishing about 750,000 pounds iron castings	J. Edward Mullen, Supt. Supplies.
New York	New York	Mar. 16, 2:30 p.m.	Installing pumping machinery and building pump house at New York City Colony Farm, Borough of Richmond	Michael J. Drummond, Comr.
Sas., Can.	Moose Jaw	Apr. 10, 8:30 p.m.	Furn. and lay. about 29,700 lin. ft. c. i. water main; sep. bids.	W. F. Heal, City Clerk.
<b>LIGHTING AND POWER</b>				
Minnesota	Minneapolis	Mar. 10, 7:30 p.m.	Lighting streets with electricity for period of one, three, five, or ten years	Henry N. Knott, City Clerk.
Sask., Can.	Moose Jaw	Apr. 10, 8:30 p.m.	Furn. 2 electrically driven centrif. pumps and auto starters	W. F. Heal, City Clerk.
<b>MISCELLANEOUS</b>				
Massachusetts	Boston	Mar. 13, noon	Making additions and alterations to County Court House	James R. Dunbar, Chm. Comrs.
Massachusetts	Boston	Mar. 15, 10 a.m.	Furnishing composition castings, about 41,500 pounds	J. Edward Mullen, Supt. Supplies.
Massachusetts	Boston	Mar. 17, noon	Erecting, and completing additions, extensions and improvements to bath houses	Richard M. Walsh, Chm. Bath Trus.
New York	New York	Mar. 17, noon	Furnishing carts with horses for disposing of street sweepings from piers and water front property, Boro. Manhattan, Bronx Brooklyn and Queens	Calvin Tomkins, Comr. of Docks.

## STREET IMPROVEMENTS

**Freeport, Ill.**—Cost of improving Jefferson and other streets with tar macadam with three-in. granite top dressing has been estimated at \$33,080.

**Fort Dodge, Ia.**—Council is considering paving and curbing of portions of six streets.—W. L. Tang, City Clerk.

**Ludington, Mich.**—Citizens have defeated proposition to issue \$50,000 bonds for street improvements.

**Millville, N. J.**—Road Committee will try experiment of paving of two squares of Millville streets with gravel stones.

**Plainfield, N. J.**—Mayor Moy will recommend to Councilmanic Street Committee that an appropriation of \$1,500 be made for crosswalks to be placed in various parts of city.

**Woodbridge, N. J.**—Township Committee is considering macadamizing of Ridgedale and Prospect Aves.

**Poughkeepsie, N. Y.**—Board of Supervisors has decided on appropriations for following roads: Connecting link through Fishkill village to complete Matteawan-Fishkill highway No. 567; total cost will be \$20,000, of which the state pays \$8,500; county, \$5,880; town, 15 per cent., \$2,500; Board appropriated \$8,400 for the county and town. The Pleasant Valley-Washington Hollow road, to cost \$37,000; county and town pay one-half, \$17,672; Milerton-County Line road, No. 709, \$7,800 was appropriated for county and town, whole cost being \$15,700; as map of proposed roads showed more miles than can be allowed for portion of the road from Rhinebeck through Staatsburg to Hyde Park was eliminated; piece of road from Rock City through Red Hook to Barrytown was added to system.

**Cincinnati, O.**—Park Commission will advertise for bids for oil and asphalt mixer to cost about \$1,500.

**Cincinnati, O.**—County Commissioners have ordered plans and specifications for improvement of Diehl road, Green Township, at an estimated cost of \$7,046; also

for repairs of Lick Run road from city to Gurley road at estimated cost of \$1,885.

**Cincinnati, O.**—Superintendent Laidlaw has submitted estimates for construction of cement walks, steps, improvement of roads and grounds at Herrmann Park at \$6,000.

**Beaver Falls, Pa.**—Council will consider paving of Penn Ave.

**Dallas, Tex.**—Bids have been ordered for grading South Boulevard from Oakland to Jeffreys st., approximately 6,412 cu. yds.; contract will include a part of Arza.

**Everett, Wash.**—County Commissioners are considering installation of rock crusher to prepare materials for road building.

**Olympia, Wash.**—State will expend about \$100,000 on construction of highways.

**Spokane, Wash.**—Plans have been prepared for grading, curbing, sidewalk and paving Pittsburg st., \$44,500; Thirteenth ave., \$8,900; Twenty-fifth ave., \$6,000; Twenty-second ave., \$7,500, and Twentieth ave., \$4,300.

**Milwaukee, Wis.**—Resolutions providing for \$1,250,000 in street work for 1911 have been prepared for Council by Department of Public Works, giving Superintendent of Street Construction and repair authority to engage in this work.

## CONTRACT AWARDED

**Cincinnati, O.**—Board of Control has approved contract with Barber Asphalt Co. for 200 tons of asphalt at \$22 a ton and with the Union Oil Co. of California, for 200 tons Malta brand, \$24.38 a ton.

## SEWERAGE

**Pasadena, Cal.**—Council is considering construction of storm drain from end to end of city.

**Fulton, N. Y.**—Citizens have voted \$20,000 bonds to complete sewer system.

**Girard, O.**—Bids will be readvertised for sewer construction on Main and Stambaugh Sts.

**Petersburg, Va.**—Council will consider construction of sewer and water mains on three streets at cost of \$5,000.

**Puyallup, Wash.**—City Engineer W. T. Bowman has estimated cost for extending present sewer system with 12-in. extension on Lacey cut at about \$2,000; engineer, however, recommended 14-in. pipe.

## CONTRACT AWARDED

**Niles, Mich.**—By Board of Public Works for the new main trunk sewer to Heystek & Co., Kalamazoo, \$18,879.25; company will use Jackson re-inforced concrete pipe; sewer when completed will be 4,350 ft. long; 36 and 60-in. pipe will be used in the construction.—H. W. Fogus, Supt., Bd. Pub. Wks.

## WATER SUPPLY

**Morgan Hill, Cal.**—Election on bonds for installation of municipal water works system is being urged.

**San Francisco, Cal.**—Board of Supervisors has passed to print bill authorizing Board of Public Works to enter into contracts for hauling and laying of high-pressure mains, conduits and appurtenances at cost of \$78,000.

**Sierra Madre, Cal.**—Water company is planning to increase capacity of present pumping plant.

**Fredericka, Del.**—Town has decided to install its own water works.

**Evansville, Ind.**—City is planning to install 16 to 20-in. main from Adams and Riverside ave. out Adams ave. to Governor st.; 12-in. mains will be installed on two streets.

**Fort Wayne, Ind.**—Board of Works will receive bids within next few weeks for 400 tons of pipe, at least 250 tons of which will be 12 and 16-in. pipe for use for main feeds for cross-town lines.

**Fulton, N. Y.**—Citizens have voted \$25,000 bonds to repipe city water system from pumping station south to Salisbury road in town of Volney.



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Joint**

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to eight branch.

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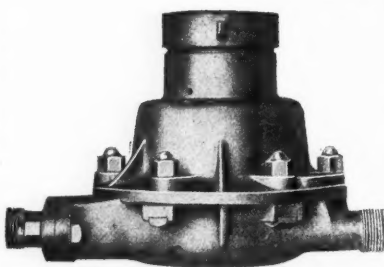
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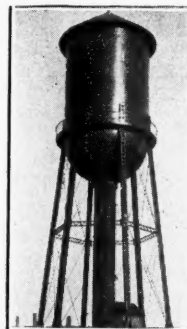
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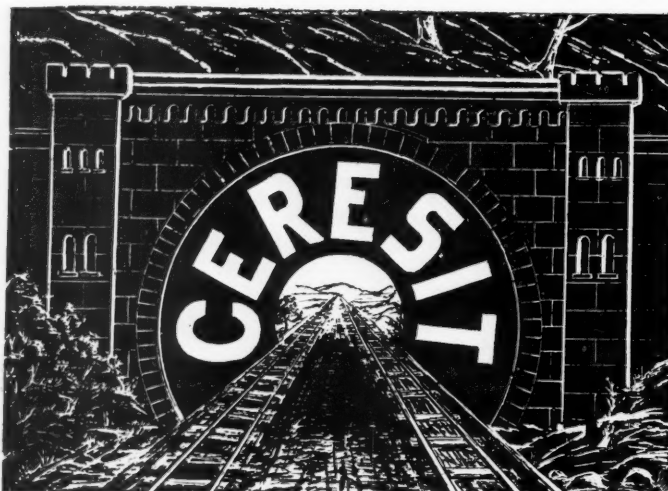
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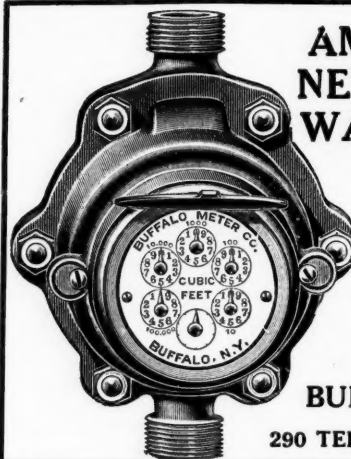
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one piece of a touring car in it. The motor is the  
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transmission is our own specially designed. It has 3  
speeds, forward and reverse. On high gear the road  
speed is 30 miles an hour. Send for catalog and descrip-  
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**Geneva, N. Y.**—Council has decided to issue \$130,500 bonds for improvement of water works.

**Point Pleasant, N. Y.**—Martin Maloney, of Philadelphia, owner of the Point Pleasant water plant, will enlarge system, putting in miles of heavier mains and two scores or more fire hydrants; more powerful pumping plant will also be installed.

**Cincinnati, O.**—Plans and estimates for erection of sterilization plant and a turbine power station at California water works have been completed and Council will be asked to authorize contracts. Superintendent Laidlaw's estimates submitted to Director Sundmaker were: For sterilization plant, \$6,500; two wash water pumps, \$6,000, two water turbines with electric generators, \$5,500. Superintendent Laidlaw also submitted estimates for turbine generator at the Western Hills pumping station at \$1,000.

**Petersburg, Va.**—Council will consider construction of water and sewer mains on three streets at cost of \$5,000.

#### CONTRACT AWARDED

**Peru, Ind.**—Godlore Conrardt, city, has closed contracts to place water works and electric light plant in best possible working condition to extent of \$60,000; city will pay rentals of \$1,100 per month for six years, then take over plant by paying additional \$1,400.

#### LIGHTING AND POWER

**Indianapolis, Ind.**—Board of Public Works has granted petitions for extension of gas mains aggregating 15,813 ft.

**Millville, N. J.**—Light Committee will obtain estimated cost for installing necessary poles, wires, lamps, etc., to operate municipal electric lighting system and secure all available data about cost of maintaining such system.

**Lexington, S. C.**—Citizens will vote Mar. 28 on whether or not town is to have electric lights; Lexington Electric Light & Power Co. has submitted bid of \$1,000 per annum.

**Niagara Falls, Ont.**—Carter Electric Co. will present proposition for ornamental street lighting system, plan after system being used in Gary, Ind., and Chicago; plans call for three clusters of lights on each side of street in each block.

#### FIRE EQUIPMENT

**Pittsfield, Mass.**—Committee on Finance has recommended appropriation of \$70,000 for fire department, including new fire station and aerial truck.

**Swampscott, Mass.**—Town has voted \$500 for new house.

**Hoboken, N. J.**—Fire Board will ask for \$4,000 for purchase of two engines; \$2,500 for auto for Chief Dunn; \$750 for modernizing fire alarm boxes, and \$4,000 for repairs to fire house at Ferry and Madison sts.

**Lockport, N. Y.**—Fire Board has instructed committee on apparatus to secure prices on purchase of cellar pipe and deluge set for aerial truck and two 35-gallon chemical tanks.

**Seneca Falls, N. Y.**—Fire Commissioners are urging election on purchase of \$1,600 hose wagon.

#### CONTRACT AWARDED.

**Covington, Ky.**—Building fire tower at 6th st. house to Covington Architectural Iron Works; furnish 2,000 ft. of hose to Eureka Fire Hose Mfg. Co., New York, N. Y.

#### BRIDGES

**San Francisco, Cal.**—Board of Supervisors is considering petition recommending that \$109,000 be made available for construction of the northerly section of reinforced concrete viaduct along Mission St.

**Fulton, N. Y.**—Citizens have voted \$80,000 bonds to erect concrete steel reinforced bridge across Oswego River.

**McMechen, W. Va.**—Bridge to cost \$2,300 will be erected over McMechen River.

#### MISCELLANEOUS

**Oakland, Cal.**—Board of Supervisors is considering erection of county infirmary.

**San Francisco, Cal.**—Board of Supervisors is considering petition recommending that \$300,000 be provided for construction of San Francisco Hospital building.

**Laporte, Ind.**—Council is considering erection of \$15,000 city hall on Indiana Ave.

**New Castle, Ky.**—Henry County citizens will erect hospital. Dr. Owen Carroll is interested.

#### CONTRACTS AWARDED

**Spokane, Wash.**—Installing police alarm system to Signalphone Co., Milwaukee, Wis., \$10,220.

## PROPOSALS

### STORM WATER SEWER

City of Williamsport, Pa.

Sealed proposals will be received by the Joint Highway and Sewer Committee or Councils until 12 o'clock Noon of Friday, March 17, 1911, for the construction of a Storm Water Sewer, by the way of one or the other of two routes, viz.: a six and one-half foot sewer 1,268 feet in length down Penn Street, or for a seven-foot sewer 1,683 feet long, approximately down the bed of Grafius Run. The same to be built of brick and concrete with their appurtenances as per specifications and plans on file in the City Engineer's Office.

Proposals will also be received for the same, to be constructed of all concrete as per plans supplemented, excepting the appurtenances, the latter to be constructed of brick. All bids must be accompanied with a certified check upon a Williamsport Bank for ten per cent of the amount bid, to insure the successful bidder entering into the contract. All bids to be upon bidding sheets to be furnished by the City.

The City reserves the right to reject any or all bids, or to accept any bid which appears advantageous to the City's interest.

The proposals to be addressed to City Clerk J. J. Galbraith and designated "Sewer Bids."

O. H. YOUNG,

Chairman of the Joint  
Highway and Sewer Committee.

(8)

### STREET PAVING

Red Oak, Iowa.

Sealed proposals for approximately six thousand (6000) cubic yards of grading in cut, twenty-five thousand, four hundred and eleven (25,411) yards brick block paving, three thousand, three hundred and twelve (3312) yards of concrete paving, nine thousand, three hundred and sixty-eight (9368) feet of curb and gutter and six hundred (600) feet of straight curb will be received by the City Clerk of the City of Red Oak, Iowa, up to ten o'clock A. M. on the 15th day of March, 1911, at which time the proposals received will be opened and will be acted upon at eight o'clock P. M. the same day. City Council reserves the right to reject any or all bids. Plans and specifications can be had by writing the City Clerk of Red Oak, Iowa.

RICHARD ROBERTS,  
City Clerk.

## NEW INCORPORATIONS

**West Goshen Light, Heat and Power Co.,** West Chester Pa., \$5,000.

**East Bradford Light, Heat & Power Co.,** West Chester, Pa., \$5,000.

**Sanitary Fountain Co.,** Jersey City, \$100,000.

**Newark Water & Electric Co.,** Newark, \$20,000.

**Impson Asphalt Co.,** Chicago, Ill.; capital, \$20,000; mining, manufacturing, asphalt and other minerals.—Incorporators: William S. Corbin, Joseph P. Eames, Earl F. Tilley.

**The Westchester Utilities Cor.,** Mt. Vernon, N. Y., general contractors, real estate and building; capital, \$500,000. Incorporators: Henry M. Kahle, North St.; Walter J. Corcoran, 108 S. 4th Ave.; William A. Richards, 52 N. 3d St., all of Mt. Vernon, N. Y.

**Anti Aqua Concrete Co.,** New York, N. Y., general contractors; capital, \$10,000. Incorporators: James H. Flynn, 221 Linden Ave., Brooklyn; William J. Thompson, 361 W. 121st St., New York City; William V. Anderson, 127 York Ave., New Brighton, St. I., N. Y.

**Mitchell Water & Light Co.,** Del. Trust Co., Wilmington, Del.; capital, \$100,000.

**The H. L. Driscoll Construction Co.,** Richmond Va.; capital, \$25,000. H. L. Driscoll, president; M. B. Van Doren, vice-president; W. J. McLaughery, secretary and treasurer.

## PROPOSALS

### WATER WORKS

Westbury, N. Y.

Sealed proposals will be received by the Board of Water Commissioners, Westbury, N. Y., until 11 o'clock a. m., March 20, 1911, then publicly opened and read.

Work will embrace furnishing approximately 630 tons cast-iron B. and S. pipe, 23 tons special castings, 100,000-gallon tank and steel tower 164 ft. high, .76 double-nozzle fire hydrants, 58 gate valves and boxes, two deep well triplex power pumps, 1,000,000 gallons capacity; two 35-horsepower multiple cylinder vertical gas engines with gas producer, concrete pumping station, and laying about seven miles of pipe, and drilling two 12-inch wells.

Plans will be on file and may be obtained from the engineer on receipt of five (\$5.00) dollars, or may be seen at the office of the engineer, or at the office of Thos. J. McCord, at Westbury, N. Y.

Specifications will be on file at the office of the engineer and at the office of Thos. J. McCord, and will be forwarded free upon application.

All inquiries must be addressed to the engineer.

All bids must be accompanied by a certified check or its equivalent for not less than 5% of the total amount bid.

The right is reserved to reject any or all bids, or accept any bid or bids, or any portion of any bid or bids.

BOARD OF WATER COMMISSIONERS,

THOS. J. MCCORD,

GEO. W. LASCELLE,

JOHN SCALLY.

Engineer, WALTER E. SEXTON, Min-  
eola, N. Y.

(1, 8)

### HYDRANTS, VALVES AND SUPPLIES

Lewistown, Montana.

Bids will be received by the City of Lewistown, Montana, up to 8 o'clock p. m., March 24th, 1911, for the furnishing of fire hydrants, valves, lead, jute and other materials.

Specifications may be inspected at the office of the Municipal Journal and Engineer, and blank form of bid and specifications, or other information, obtained from

P. A. CHASE,

City Clerk, or

O. F. WASMANSDORFF,

City Engineer.

(1, 8, 15, 22)

### CAST-IRON WATER PIPE

Lewistown, Montana.

Bids will be received by the City of Lewistown, Montana, up to 8 o'clock p. m., March 24th, 1911, for the furnishing of approximately 50,000 feet of cast-iron pipe of 130 lbs. pressure.

Specifications may be inspected at the office of the Municipal Journal and Engineer, and blank form of bid and specifications, or other information, obtained from

P. A. CHASE,

City Clerk, or

O. F. WASMANSDORFF,

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